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Governance mechanisms and metrics for digital platform workers

Multiple case study of digital labour platforms

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ABSTRACT:

Aim: This study aims to reveal which governance mechanisms and their metrics digital labour platforms use and how they are used to govern platform workers. Moreover, this study's purpose is to analyse three different digital labour platform companies related to the governance of platform workers. The study aims to form and test a framework for the digital labour platform governance mechanisms and their metrics based on a literature review and empirical findings.

Framework: The study framework combines traditional firm governance, digital platform governance and crowdwork governance theories. In addition, the concepts of control and coordination in governance mechanisms are presented in the literature review of governance theory. The themes are combined to form a framework for digital labour platform governance mechanisms for platform workers.

Methodology: The empirical research section is formed with qualitative research and multiple case study method. The approach of the study is subjectivist. Moreover, interpretivism and critical realism views are used because they fit the people-oriented and multi-dimensional research theme. The research data is collected with interviews of the case companies' representatives who were in positions to know the subjects.

The findings reveal what and how governance mechanisms and metrics are used in digital labour platforms to govern platform workers. In addition, the results show two new governance mechanisms: platform worker training and activity monitoring. Governance mechanisms identified include access control, activity monitoring, task management, incentive management, contract management, and training in every case company. In contrast, only two companies used reputation monitoring, quality control, and behavioural control. The findings differ somewhat between the case companies. The reason for the variation between the companies might be due to the variety in the level of autonomy and skill levels of platform workers. The governance mechanisms and metrics findings are brought together into a framework. Also, this study revealed new information about governance metrics of digital labour platforms, which had a little information in the literature. Thus, the governance metrics found in this study give significant new knowledge about the subject. They help to show how firms can use the data for platform worker governance in digital platforms. For instance, user logins, system usage, and profile completion rate measure platform workers' activity. These findings can help digital labour platform companies better understand many possibilities in ways to govern digital labour workers.

KEYWORDS: Digital platform; Digital labour platform; Platform workers; Platform governance; Governance mechanisms; Governance metrics.

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TIIVISTELMÄ:

Tavoite: Tämän tutkimuksen tavoitteena on selvittää digitaalisten työtä välittävien alustojen alustatyöntekijöihin kohdistuvia hallintamekanismeja ja niiden mittareita. Tarkoituksena on analysoida kolmen case yrityksen alustatoimintaa suhteessa alustatyöntekijöiden hallintaan. Tutkimuksessa muodostetaan viitekehys digitaalisten alustojen hallintamekanismeista ja niiden mittareista kirjallisuuskatsauksen ja empiirisen tutkimuksen perusteella.

Viitekehys: Tämän tutkimuksen viitekehyksessä yhdistyy perinteisten yritysten hallintamekanismeja, joukkotyöhön liitettyjä hallintamekanismeja sekä digitaalisten alustojen jo tiedettyjä hallintamekanismeja. Lisäksi kontrollin ja koordinaation konseptit liittyen työntekijöiden hallintaan esitetään kirjallisuuskatsauksessa ja ne liitetään osaksi viitekehystä. Myös joitain vähän tiedettyjä hallintamittareita on lisätty viitekehykseen. Näistä teemoista muodostuu tutkimuksen viitekehys alustojen alustatyöntekijöille suunnatuille hallintamekanismeille ja niiden mittareille.

Metodologia: Empiirinen tutkimus koostuu laadullisesta tutkimuksesta ja usean tapaustutkimuksen menetelmästä. Tutkimuksen lähestymistapa on subjektiivinen. Lisäksi interpretivismin ja kriittisen realismin lähestymistapoja käytetään tutkimuksen analysoimisessa, sillä ne soveltuvat tutkimuksen ihmislähtöiseen ja moniulotteiseen teemaan. Tutkimuksen aineistonkeruumenetelmänä käytetään case yritysten edustajien haastatteluja.

Tulokset: Tutkimuksen tulokset osoittavat, että mitä ja kuinka hallintamekanismeja ja niiden mittareita käytetään digitaalisilla alustoilla alustatyöntekijöiden hallitsemiseen. Tulokset osoittavat myös kaksi uutta hallintamekanismia: alustatyöntekijöiden kouluttamisen ja aktiivisuuden valvomisen. Hallintamekanismeista tunnistettiin pääsyn valvonta, tehtävänhallinta, sopimushallinta, ja kouluttaminen kaikissa case-yrityksissä. Sen sijaan vain kahdessa yrityksessä tunnistettiin maineen valvonta, laadun valvonta ja käyttäytymisenhallinta. Syyt vaihteluihin yritysten välillä saattavat johtua alustatyöntekijöiden erilaisista autonomian tasoista ja taitotasoista. Tulokset hallintamekanismeista ja niiden mittareista digitaalisilla alustoilla on kerätty yhteen viitekehykseen. Tutkimuksessa selvisi uutta tietoa hallintamittareista, joista ei ollut aiemmin paljon tietoa kirjallisuudessa. Siksi hallintamittarit, jotka onnistuttiin löytämään tässä tutkimuksessa antavat merkittävää uutta tietoa aiheesta. Ne auttavat yrityksiä ymmärtämään kuinka hyödyntää dataa alustatyöntekijöiden hallitsemisessa. esimerkiksi aktiivisuuden valvomisessa voidaan käyttää mittareina käyttäjän sisäänkirjautumisia, järjestelmän käyttämistä, ja profiilin valmiusastetta. Tulokset auttavat yrityksiä huomaamaan monipuolisesti mahdollisuuksia alustatyöntekijöiden hallitsemisessa ja ottamaan huomioon alustatyöntekijöiden autonomian ja osaamistasot hallintamekanismeja valittaessa.

AVAINSANAT: Digital platform; Digital labour platform; Platform workers; Platform governance; Governance mechanisms; Governance metrics.

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1 Introduction

Business venues have been operating on a platform for centuries as markets, shopping malls, and bazaars (Kääriäinen et al., 2021). However, with digitalisation, the platform economy has spread rapidly, and digital platforms can be created for almost every industry (Kääriäinen et al., 2021; de Reuver et al., 2018). Digital platforms are becoming increasingly important as they operate in multi-sided markets and can be visible in several domains, such as social networks, sharing economies, and mobile app stores (de Reuver et al., 2018). In addition, according to de Reuver et al. (2018), digital platforms construct new sociotechnical artefacts that encourage scholars to participate in methodological and conceptual innovation. Their superiority is the ability to create value compared to the traditional ways of organising businesses (Cennamo & Santaló, 2019). Moreover, their superiority is based on the network effects of a collective community (Koponen, 2019, p. 129).

Digital platforms differ from traditional companies, and one reason for that is that actors are at the centre of platform value creation (Koponen, 2019, p.129). Their business models have a new value-creation structure with collaboration (van Alstyne & Schrage, 2016; Prahalad & Ramaswamy, 2004). Researchers have shown that in digital platforms, multiple components and actors interact to shape and influence the platform (Eaton et al., 2015; de Reuver et al., 2018). Thus, platforms require investing in making their users more capacity to create value, which can be as important as reducing transaction costs (Van Alstyne & Schrage, 2016).

Moreover, the specific means may take different forms because digital platform decision rights are allocated among the owner of the platform and other actors, and not in headquarters and business units or among joint venture partners as in traditional businesses (Tong & Li, 2013). Also, platform owners' orchestration role differs from conventional companies since they have access control and control over restricting or broadening the number of actors in the platform and shaping actors' value-creation activities (Zhang, Li, & Tong, 2020). Prior research suggests that platforms require distinctive relationship

management (Cusumano & Gawer, 2002; Gawer & Cusumano, 2008; Leong et al., 2019; Weill & Worner, 2015) and incentives and control (Chen et al., 2022; Gibbons, 2005).

However, there is a clear need for future research to understand more about the governance of digital labour platforms. Scholars have suggested that future research needs to be conducted on the mechanism used in digital platform governance (van Alstyne & Schrage, 2016; Cennomo & Santaló, 2019; Chen et al., 2022; Tiwana, 2015). For instance, Cennamo and Santaló (2019) ponder what governance mechanisms platform owners could use to balance out tensions in platform ecosystems that are not constraining supply-side users' autonomy and ecosystem generativity. Similarly, Chen et al. (2022) suggest a need for future research to deepen the knowledge about the dynamics and development of governance in digital platforms. They note that there are significant research opportunities to improve understanding of the discrete governance instruments, the interaction among them, and the dynamics that impact to incentive and control functions of platform owners. According to Gol et al. (2019), while control is essential in all governance, coordination is especially important in managing dependencies when work is large-scale, temporary, distributed, and mediated. Thus, they state that future research should focus on the empirical study of the coordination mechanisms and their functioning. Also, Chen et al. (2022) emphasise that understanding how platform owners manage the relationship with supply-side users could enable the platform to achieve a competitive advantage and enrich the current knowledge of hybrid governance.

Moreover, little is known about the platform owner’s governance metrics, which monitor platform workers. More specifically, only a few empirical researches focus on the metrics to govern the platform actors, especially the supply-side users that provide the service for the users in the platform, also referred to as platform workers in this study (van Alstyne & Schrage, 2016; Kuhn & Maleki, 2017). For instance, van Alstyne and Schrage (2016) state that future research needs to move beyond an efficiency model of platforms that concentrates on establishing relationships to reduce transaction costs and strategically invest in creating measurably better users to create a sustainable

model for platform leadership. Also, according to Kuhn and Maleki (2017), many platform workers are controlled by digital platform firms and their algorithms, consisting of customer feedback and other metrics, which are not empirically researched. They note that it is surprising that scholars have paid relatively little attention to the online labour platform phenomenon. Thus, there is a clear need to investigate the metrics used in different digital platforms, especially for platform workers' output evaluation (Chen et al., 2022). Because data is a key asset in the digital platform economy and users gain more value as the platform learns more about them with the user data it collects (Gregory et al., 2021), it is important to understand the metrics used in monitoring platform workers to draw a picture of the way of governance in digital labour platforms. In addition, Chen et al. (2022) study of governance literature shows that prior studies of platform workers' output control have concentrated mainly on online feedback systems. However, they acknowledge that digital platform firms also rely on internal performance metrics to control their platform workers. For behavioural management digital, platforms can reduce transaction fees and provide unique value-added services (Zhu & Iansiti, 2019).

This study concentrates on digital labour platform governance mechanisms and metrics. Figure 1 shows the research gap. Digital labour platforms could potentially use various governance mechanisms and metrics for platform workers since they concentrate on governing people. Also, platform work is quite a new way of organising paid work via digital platforms (EURES, 2022), which makes the topic very valuable to research. Moreover, they transform the way of working (International labour office, 2021), which makes them an interesting research topic. Because there is little research on digital labour platform governance, every collected data can be important to gain a deeper understanding of the subject. In addition, the framework of governance is only for crowdwork platforms (Gol et al., 2019), so a new theoretical framework must be formed. Thus, this thesis concentrates on yielding valuable information about the digital labour platforms that provide work as a service. To address this research gap, this study aims to answer the following research question.

What governance mechanisms and metrics do digital labour platform owners use, and how are they used to govern platform workers in digital labour platforms?

This valuable subject topic needs recognition to grasp more about it. Also, this thesis adds to the need for comparability with the study of different digital platforms. This study aims to reveal and develop further knowledge of the platform owner's governance mechanisms and metrics for platform workers. This can show digital platform owners' different possibilities to govern platform workers and this way to enhance actors' value creation in digital platforms. Moreover, this study discovers governance metrics, it can show new information about governing with data. This study is qualitative and uses multiple case studies, and interviews are used as the data-collecting method.

This study contributes to the literature in five ways. First, it seeks to reveal the governance mechanism and metrics that platform owners have for platform workers and how they use them in digital labour platforms to develop the framework of governance mechanisms and metrics for digital labour platforms. The theoretical framework is developed based on traditional firm governance, crowdwork governance and digital platform governance theories. In addition, this study forms and develops a theoretical framework based on empirical findings. Second, this study shows how the governance mechanisms apply to the case companies, not crowd work platforms but other digital labour platforms in which tasks are given to selected individuals. Third, it aims to find new governance mechanisms for digital labour platforms. Fourth, the purpose is to reveal what kind of governance metrics are used in digital labour platforms to govern platform workers with data. Fifth, the aim is to find why some governance mechanisms and metrics might differ between the case firms.

The structure of the thesis is as follows. After the introduction theoretical background of the thesis is covered. It presents relevant prior theories and literature on digital platforms and governance mechanisms. After that comes a section that presents the

methodology of the thesis. In that section, the chosen research method will be presented and justified. In addition, the nature of the research is presented. Also, the reliability and validity of the thesis will be underlined. After that comes a section about the findings of the thesis. The findings of the three companies are presented. In the last section, the findings of the thesis are discussed, and conclusions are made.

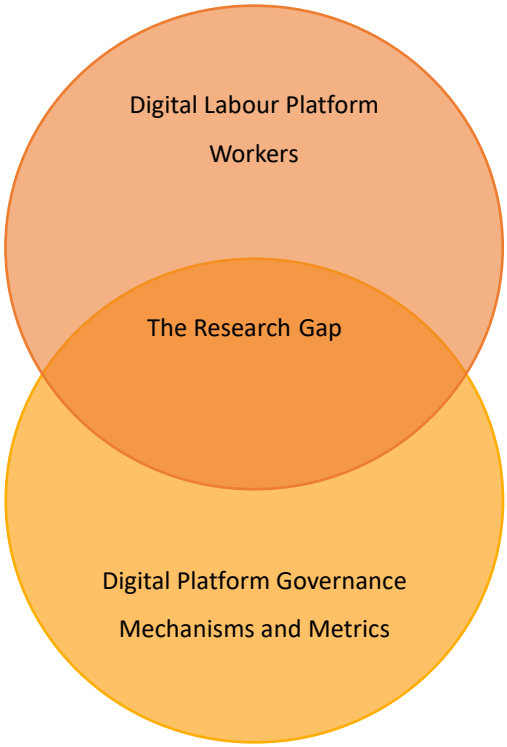

Figure 1. The research gap.

2 Literature review

The literature review includes two main streams. The first section describes the concept of a digital platform and its actors operating and creating value in the digital platform. The section presents the fundamental concepts of platforms' way of working. It consists of defining the actors associated with a digital platform and understanding the way they operate and make transactions in digital platforms. Also, it considers the value creation of a digital platform business model. The second section consists of the governance theory and mechanisms in crowdwork businesses. The key concepts of control and coordination in governance are presented. The themes are individually presented to illustrate the literature on the subjects. After the presentations of the themes, they are synthesised into the synthesis section that provides the framework for this thesis. These sections frame the theoretical perspective of the platform's way of working and use the crowdwork governance mechanisms to form a framework for digital labour platform governance mechanisms. These are the key concepts to form this study's framework of platform workers' governance mechanisms.

2.1 Digital platform

According to de Reuver et al. (2018), there are still many fundamental differences regarding digital platforms and ecosystems among academic disciplines, such as strategy, economics, and telecommunications. Still, they can provide a great foundation for understanding digital platforms. A digital platform can be described considering the technology view (Tiwana et al., 2010), the economic view of the platform business model (Hagiu, 2006; 2009), the ecosystem view, and combining those views with the sociological view of the platform (Garud et al., 2020). De Reuver et al. (2018) consider three main concerns that occur in the digital platform study: conceptual clarification of the concept of the digital platform, the scoping of digital platforms, and resolving critical methodological issues in the digital platform study, which are because the business domain is developing.

2.1.1 Definition of digital platform

Digital platforms have multiple conceptualisations in the literature. According to de Reuver et al. (2018) literature review, there is a wide range of different concepts for digital platforms. There are many views on the digital platform definition, including economic, technical, ecosystem and social views.

A digital platform can be defined as a dynamic, multisided marketplace with the interaction of multiple different actors (Viitanen et al., 2017). Parker et al. (2016a, p. 10) and Viitanen et al. (2017) refer platform as a business model containing technology, which brings together people, resources, and organisations in an ecosystem where value is created and exchanged interactively. Also, Viitanen et al. (2017) define that in digital platforms, actors practice together activities that make added value. For instance, Uber has an app for smartphones that connects riders and drivers who offer on-demand rides with their vehicles with an app (Garud et al., 2020). Digital platform makes it possible to make real-time transactions with actors on two sides of the platform and makes it easy to transact with reduced costs and locate each other (Brynjolfsson, Hu, & Smith, 2003). In addition, according to Kuhn and Maleki (2017), digital platform firms make operational decisions about how the control is allocated between workers, customers, and the firm.

More of **a technical point of view** of a digital platform describes a digital platform as a platform with modular architecture and an interface provider that facilitates transactions between users and supply providers (Li et al., 2019). A technical view of digital platform describes them as technical artefacts where the platform is an extensible codebase, and the ecosystem contains third-party modules that complement this codebase (Tiwana et al., 2010). Ghazawneh and Henfridsson (2015) develop on Tiwana et al. (2010) definition of digital platforms by describing them as external and based on software. According to them, they consist of the extensible codebase in a system based on software that provides key functionality. Also, Eisenmann et al. (2011) and Hagiu (2009)

describe a digital platform as a technological entity. The digital platform has a variety of modules capable of extending the functionality of a software product (Baldwin & Clark, 2000). These modules are “add-on software subsystems” (Tiwana & Konsynski, 2010, p. 676). They are often third-party applications (de Reuver et al., 2018). Such applications can be defined as executable software that can be provided to end users as services, applications, or systems (Ghazawneh & Henfridsson, 2013, p. 175). Moreover, combining the modularity of physical products with the layered architecture of software results in loosely connected architectures through standardised interfaces. It leads to products that may have new meanings when completed (Yoo et al., 2010, p. 729).

However, although work has been done in the management research field to study digital platforms, technology or digitalisation generally is not considered theoretically relevant. The concern is that technology platforms are treated as the same, and classifications lean on organisational arrangements only (Gawer, 2014; Thomas et al., 2014). Thomas et al. (2014) note that one of the key elements of platform ecosystems is technology, but not necessarily digital technologies. The perspective of engineering design proceeds on Simon's (1996) understanding of near decomposability, where the interaction is stronger within the modules than between them.

To elaborate on the technical view, digital platforms can also be viewed and described from **an economic view**. This view considers platforms as digital marketplaces facilitating and connecting transactions among two or more groups of actors (Hagiu, 2006; 2009; Parker et al., 2016a). In addition, the platform business is defined as a business that takes place on a digital platform and focuses on enabling interaction between the parties (van Alstyne and Parker, 2017; Kääriäinen et al., 2021). Gawer (2014) shows industry platform types by giving examples such as Facebook, Google, and Apple. Similarly, to Tilson et al. (2012), Gawer (2014) notes two perspectives in the study of platforms, including engineering design and economics. According to Leong et al. (2019), many firms can offer digital platform services like crowdsourcing and online communities.

However, according to them, some firms depend on owning digital platforms and should be defined as digital platform firms.

Digital platforms can also be considered through **an ecosystem view**. Because platforms can interact with other technologies, an ecosystem of complementary technologies may form around them (Cennamo, Ozalp, & Kretschmer, 2018). Innovation emerging within the ecosystem of interconnected technologies broadens platform's functionality (Garud et al., 2020). Alaimo et al. (2020) consider platforms as service ecosystems, referring to the platform operating within diverse service ecosystems. They refer that ecosystem considers the synergies and complementarities among many organisations' activities, resources, or outputs. According to them, ecosystems operate in value-reinforcing activities and resource complementarities, usually among many organisations, industries, and platforms.

However, digital platforms can also be described as combining economic, technical, and **social views**. Garud et al. (2020) broaden the two perspectives by adding a sociological perspective to the theory of platform dynamics. When the engineering design perspective concentrates on complementarity and the economic perspective concentrates on transactions, the sociological perspective emphasises the platform acceptance and recognition by social groups that form the ecosystem (e.g., Logue and Grimes, 2019). Digital platforms are viewed as sociotechnical accumulation containing software and hardware, which are technical elements related to organisational standards and processes (Tilson et al., 2012).

A digital platform economy is defined as a market in which businesses enabled by digital platforms is achieved a significant or dominant market position (Viitanen et al., 2017). Platform economy refers to a phenomenon in which a platform brings together different actors, such as buyers and sellers, and enables an exchange or sharing of information, services, and goods between those actors (Van Alstyne and Parker, 2017; Kääriäinen et al., 2021). Moreover, the digital platform economy creates value through user

interaction (Eisenmann et al., 2011; Hagiu, 2009). Diverse users can make complementary offerings and form a network in a digital platform that the digital platform firm has provided (Leong et al., 2019). Also, in the digital platform economy, the firm must position itself correctly in the value network, disrupt current business models and create a data strategy (Kääriäinen et al., 2021).

A digital platform ecosystem consists of a multilateral set of autonomous actors collaborating to implement a value proposition (Adner, 2017; Jacobides, Cennamo, & Gawer, 2018). It can also be defined as networks of interdependencies (Viitanen et al., 2017). Moreover, an ecosystem is a set of autonomous actors cooperating to realise value propositions (Adner, 2017; Jacobides et al., 2018). It can consist of actors from multiple industries specialising in different capabilities domains (Thomas et al., 2014). Viitanen et al. (2017) describe that the actors involved in autonomous practice operations create a whole, which produces value, that is significantly larger than the sum of the parts. They could provide content, networks, hardware devices, or software services (Yoo et al., 2010). In ecosystems, service providers and their partners gather to develop product-service entities complementary to each other and customer value-producing solutions in selected themes (Viitanen et al., 2017). The digital platform firm can coordinate ecosystem partners' activities with a collaborative relationship (Tiwana, 2015). In addition, according to Li et al. (2019), an ecosystem can be thus reviewed as a cooperative relationship governance mechanism. Hence, they describe that the ecosystem perspective illustrates digital platform firms' structures better than traditional theories (Li et al., 2019).

Digital labour platforms, which this study considers, provide infrastructure to advertise and seek tasks for many potential workers from various geographical locations (Berg et al., 2018.). However, according to Kuhn and Maleki (2017), labour platform firms are more than communication venues since they are parties to the relationship between the worker and customer. Digital labour platforms can be categorised into web-based and location-based platforms (Berg et al., 2018; International labour office,

2021; Schmidt, 2017). The categorisation of digital labour platforms is shown in Figure 2. Web-based platforms work is outsourced to a geographically dispersed group through open invitation, also known as crowd working. In contrast, location-based applications provide work to people in a specific geographic area, typically local service-oriented tasks such as running errands, driving, or cleaning (Berg et al., 2018; International labour office, 2021). They describe that web-based platforms include tasks given to selected individuals, such as freelance marketplaces (e.g., Upwork), tasks given to crowds, such as micro-tasking crowdwork (e.g. AMT), and content-based creative crowdwork (e.g. 99designs). In contrast, they describe that location-based platforms consider tasks given to selected individuals, such as accommodation, transportation, delivery, and household services, and tasks assigned to crowds, such as local micro-tasking.

Figure 2. Digital platform categorisation. Adapted from Schmidt (2017).

2.1.2 Actors

Digital platform actors consider supply-side users, demand-side users, service providers, platform sponsors, and other stakeholders across organisational boundaries (Eisenmann et al., 2008; Viitanen et al., 2017; Kääriäinen et al.,2021). There are various terms to describe the actors, and this study uses the terms platform owner (1), demand-side users, also customers (2), and platform workers, also supply-side users (3), platform

sponsors (4) to describe the sides of the platform actors. Actors in each category try to maximise their value creation, such as service needs, environmental responsibilities, optimisation requirements, development of new production models, price optimisation, or procurement optimisation (Viitanen et al., 2017). Digital platform actors have a variety of roles. According to Viitanen et al. (2017), actors and their roles may vary depending on the digital platform business model. Figure 3 shows the platform actors.

Platform owner (Chen et al., 2022, Kääriäinen et al., 2021) is referred to in literature regarding platform provider and sponsor (Eisenmann et al., 2008), which Chen et al., 2022 defines as own term referring to different than platform owner. In contrast to Eisenmann (2008), Kääriäinen et al. (2021) refer to a platform provider and platform sponsor as the same, called platform owner, who defines and controls who can access the platform and in which terms. Also, Eisenmann (2008) notes that the roles of platform sponsor and platform provider coincide. Differently, Chen et al. (2022) recognize platforms (i.e., Android), platform owners (i.e., Google), and platform providers (e.g., Samsung) as own group of actors.

The platform owner defines and controls who can join the platform and influences what kind of content, products, and services are allowed on the platform (Kääriäinen et al., 2021). The platform owner creates the transaction's contact point and provides the platform's components and rules (Einsenman et al. 2008, Kääriäinen et al, 2021). According to Kääriäinen et al. (2021), the platform owner seeks to enable maximal value creation between the actors. Thus, the platform owner tries to provide suitable tools, operating models, and rules (Kääriäinen et al., 2021). These include hardware, software, and service modules (Eisenmann et al., 2008). Viitanen et al. (2017) suggest that the platform owner can provide the technical elements of the platform with operating models that facilitates platform use and provide the application that enables facilitated transactions between the supply and demand side. Owners can also provide advertising campaigns and marketing actions for the platform and differentiate the platform administration to its activity (Kääriäinen et al., 2021). Kääräinen et al. (2021) note that owners can create

tools, quality criteria, partner models, and attractive rewarding systems to control quality in the platform. Platforms have legal ownership of the key productive asset of the platform interface and architecture, which gives platform owners the ability to govern (Boudreau, 2017). Owners set common policies for actors to guide the business (Viitanen et al., 2017; Kääriäinen et al., 2021). According to Viitanen et al. (2017), the platform owner enables the platform to manage and collect data.

Supply-side users (Eisenmann et al., 2008) are also referred to as the complementors, who provide complementary products and services in the platform (Chen et al., 2022; Li et al., 2019), and as platform workers (Kuhn & Maleki, 2017). They can be described as sellers responsible for producing products and services (Kääriäinen et al., 2021; Chen et al., 2022). According to Kuhn and Maleki (2017), it can be reasoned to consider the platform worker as a worker rather than a service seller and consider the differences in relationships among platform firms because all platform workers are not similar stakeholders. **Platform workers** may describe the term more specifically for this study because the research considers digital labour platforms, and thus it is used as a term in this study. Still, supply-side users are used as a broader term that describes those workers in all types of digital platforms.

Also, according to Eisenmann et al. (2008), supply-side users ensure the supply of goods or services, whereas demand-side users demand and acquire goods or services using the platform. According to Kuhn and Maleki (2017), platform workers also control the platform firm differently from traditional independent contractors. According to them, a labour platform firm usually has no official responsibility for platform workers' protection, performance, or payroll taxes. They note that platform workers can vary in required skill levels and customer work duration. Li et al. (2019) note that digital platform actors are autonomous, and platform workers possess complementary assets. Similarly, Kuhn and Maleki (2017) state that platform workers might own some assets, such as a car or a computer, but the company owns the key technology assets to govern work and interactions in the platform. They describe that platform workers have some autonomy since

they can, for instance, manage their schedules. However, they state that the decision-making distribution between the actors varies considerably between platforms, and so do platform workers' rewards base on results.

Platform demand-side users (Eisenmann et al., 2008), can also be referred according to Viitanen et al. (2017), to customers including five categories. These are consumers, key groups of specialists, companies, technology or service providers, development companies, researchers or institutions, and public sector actors. Eisenmann et al. (2008) write that demand-side users' can be users of the service and customers of the service entity supplements. They can, for instance, collect, use, and complement their data repository (Viitanen et al., 2017). The demand side users' role is buying the services or goods in the platform (Eisenmann et al.,2008).

Cooperative organisations can be referred to as developers and cooperative companies, according to Viitanen et al. (2017). They describe cooperative organisations' role is to support the platform's functioning. Also, they note that the developers' role is to develop and maintain the platform.

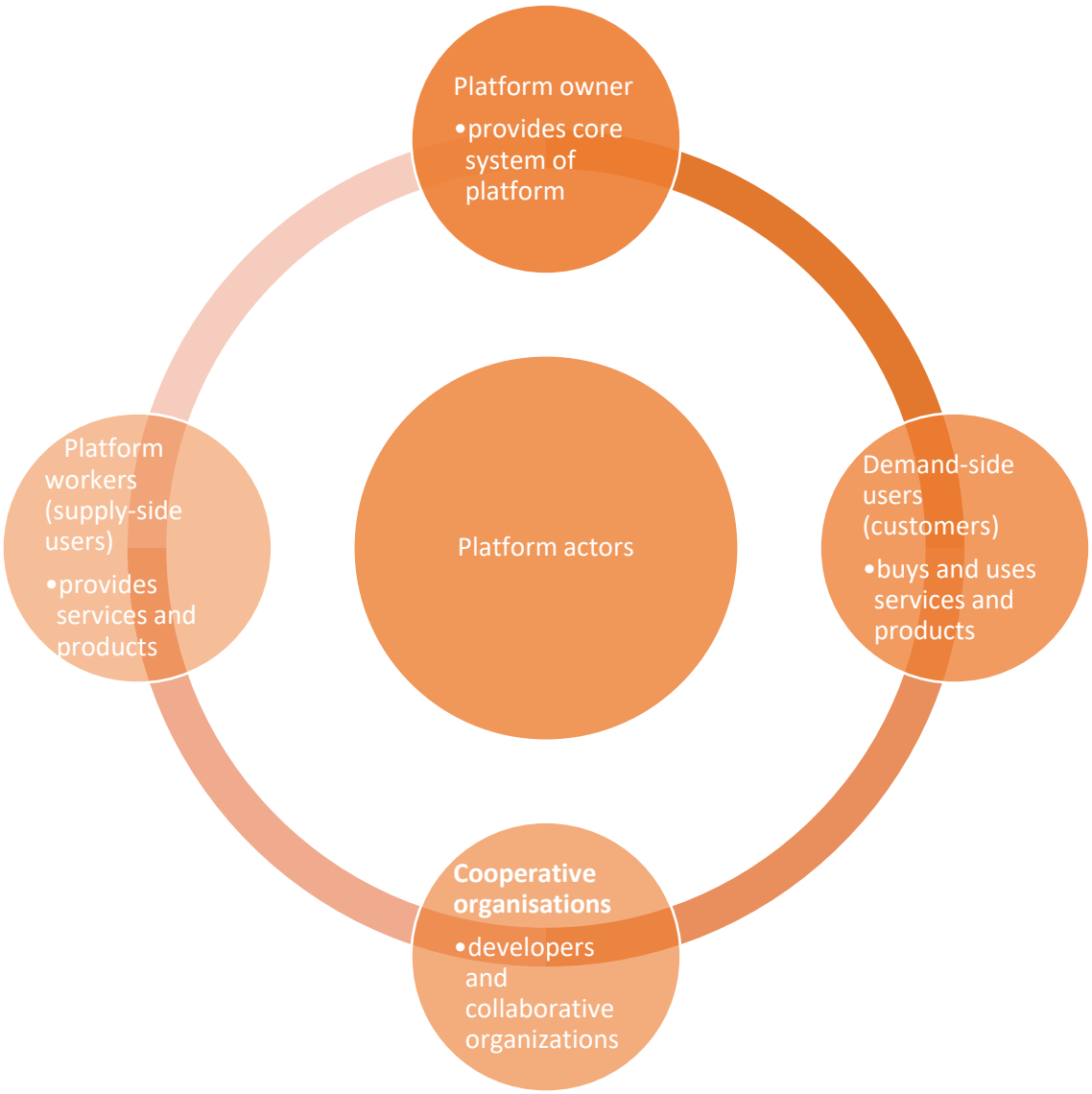

Figure 3. The platform actors.

2.1.3 Digital Platform Value Creation Through Actors

Network effects are the key to value creation in platforms. A network effect refers to a phenomenon in which users generate value with their activities and attract more users to the platform (Evans & Schmalensee, 2016). According to Basole (2009) and Van Alstyne et al. (2016), the classic value chain model enables value creation through

controlled linear activity series with a vertical command chain. In contrast, digital platform businesses work with network-centric thinking. According to them, network-centric thinking is based on collaborating horizontally with users participating in the platform. Users on the digital platform can build offerings and generate a network (Leong et al., 2019).

Network effects can be direct or indirect, negative or positive, and same or cross side (de Reuver et al., 2018). Direct network effect refers to the value of the network increasing because the number of users increases (Katz & Shapiro, 1985). Caillaud & Jullien (2003) have considered indirect network effects and their challenges within and across platform sides, noting that there is a challenge to get actors to join the platform because to attract demand-side users, the platform should have a large selection of supply-side users and to attract supply side users, the platform should have many demand-side users as potential customers. Moreover, Koponen (2019, p. 137) states that in terms of customer numbers, it is important to achieve the critical mass of users, because the platform makes sense only after it has reached the critical mass. According to Boudreau (2012) and Boudreau and Jeppesen (2015), negative same side effects consider a decrease in value to actors on one side, while the number of actors increases on that side, due to crowding. Whereas negative cross-side effects consider a decrease in value to actors on one side, because of the number and low-quality of actors on the other side, for instance, due to too many or low-quality of supply-side users in the platform can decrease value for the demand side users (Helfat & Raubitscheck, 2018). Positive same-side network effects attracting more actors on the same side as the actor and thus increase value creation to actors on the same side of the digital platform (Katz & Shapiro, 1985; Garud et al., 2020). This is when the supply-side users of the platform attract more supply-side users, and demand-side users of the platform attract more customers. The cross-side effect refers to the producer side attracting more customers to the platform and another way around (Katz & Shapiro, 1985; Zhu & Iansiti, 2012). As a result, interactions between customers and providers grow exponentially, and the platform's value increases (Garud et al., 2020). Since in digital platforms value is gained through building

advantages for different actors and cooperating with them, it is important to consider how to create advantages for each market participant and balance them to gain positive network effects (Li et al., 2019).

In addition, digital platform firms can lead the market with their network size, meaning the number of connected users to their platform (Evans & Schmalensee, 2016). Koponen (2019, p. 198) notes that network effects enable growth to be significantly more effective and a way that protects the business. Digital platform firms depend on the user growth in their network to lead in the markets and maintain their position (Leong et al. 2019). Network development requires the orchestration of the resources of actors to create value, not just improve effectiveness (Van Alstyne & Schrage, 2016). Because digital platform firms' value creation is not inside the firm but outside the firm through actors (Amit & Han, 2017; Parker et al., 2016b), it is important to attract the parties to the platform and to ensure the quality of them (Kääriäinen, 2021). Kääriäinen (2021) writes that quality parties can bring value to the platform, and it can even be said to be one of the most important competitive advantages of the platform when competing in the markets. Similarly, Van Alstyne and Schrage (2016) note that it is strategically as important to cultivate user capability as it is to reduce transaction costs in digital platforms.

Most network theories assume that value-adding activities can be sliced into fine slices and organised with effective mode (Li et al., 2019). However, platform firms rely on the premise of value creation, requiring many co-specialized actors whose coordination gives better returns (Boudreau, 2017). Also, Viitanen et al. (2017) emphasise that digital platforms' hard-to-copy asset is the network community of actors, the supply they produce, and their holdings, such as cars, ideas, and know-how. Thus, whereas traditional companies should consider internal optimisation with the value chain, the digital platform should consider value creation through actors' interactions and facilitate and orchestrate them by encouraging operations among them, motivating and managing them. Similarly, Van Alstyne and Schrage (2016) note that platform owners are more

than matchmakers that use algorithms to make better buyer-seller matches. According to them, they should invest in value creation by cultivating user capability. They refer to it as actor empowerment since it can be said to be as important as reducing transaction costs. The platform model of investment creates increased value to sell, multi-sided surplus compared to traditional business models that sell products and services or matchmaking models that sell reduced transaction costs (Van Alstyne & Schrage 2016).

2.1.4 Business models

According to Koponen (2019, p. 116), understanding business models refers to understanding how a company operates. Business models refer to enabling the realization of strategy (Casadesus-Masanell & Ricart, 2010). The business model concept refers to the value creation and value ownership by shifting from the firm's view (Barney, 1991; Porter 1985) to the boundary-spanning system of activities that resources or actors operate and that is linked to transaction mechanism (Amit & Zott, 2001). Platform companies' business models can generate continuous improvement, which is one of the key factors for platform business models together with the network effects (Koponen, 2019, p.129). According to Koponen (2019, p.136), the platform business model consists of a business system entity and an earnings model. **The business system** refers to how a firm's material reality is organized, such as who is responsible for certain tasks in the system (Koponen, 2019, p. 118). It helps a firm to keep its value proposition to the customers and learns about its business environment, which is a way to build business models that can respond to the change in environment, he writes. **The earnings model** refers to different intangible currencies, such as money, that circulate in a company and generate profit for the company and benefit the market participants (Koponen 2019, p.118). It refers to how the firm makes a profit (Koponen, 2019, p.136).

Also, digital platforms can have a variety of business models. Platform business models include such as Service dominant logic, Data based business, MyData service, Network business models, Platform technical and operational development, Application

development with a customer- and user interface, and Digital solutions and digital interface development (Viitanen et al., 2017). E-commerce can be a digital platform connecting sellers and buyers and mobile applications linking supply users and demand users (Leong et al., 2019). According to de Reuver et al. (2018), digital platforms can be such as operating systems platforms (iOS and Android), payment platforms (Apple Pay, PayPal, and Square), peer-to-peer digital platforms (Uber and TaskRabbit), and social media platforms (Facebook and Instagram). Evans and Gawer (2016) analysed platform companies with a market capitalisation of more than $ 1 billion in their research of the platform economy. They classified the platform companies by industry and platform types: marketplace platform, innovation platform, a combination of marketplace and innovation platform, and investment platform. In contrast, innovation platforms were classified as companies such as Microsoft, Intel, and Oracle and combination platforms such as Apple, Google, and Amazon.

Moreover, digital platforms impact business fields. More and more companies are implementing platform business models because of their effectiveness and network effects (de Reuver et al., 2018). Many large companies such as Google, Amazon, Apple, and Alibaba have taken advantage of the platform business model (de Reuver et al., 2018). Famous digital platforms include Uber and Upwork (EURES, 2022). Digital platforms change how users interact with organisations as they relieve online consumer communities (Spagnoletti et al., 2015). Digital platforms impact inter-organizational relations of Information system development because traditional principal-agent relationships with software developers change to arms' length relations with platform providers and app developers (Tiwana and Konsynski, 2010; Ghazawneh and Henfridsson, 2013; Eaton et al., 2015). Also, digital platforms impact information system artefact architecture as the traditional monolithic approach is changed to the modularity of digital platforms (Tiwana and Konsynski, 2010). The competition was earlier in value chain control but has changed to attracting generative and platform-associated activities (de Reuver et al., 2018). Sharing economy and business models of digital platforms are transforming the business environment, such as the regulations (Davis, 2016; Mair & Reischauer,

2017). That is due to legitimacy, which refers to a generalised notion or presumption of an entity's actions being appropriate, desirable, and proper by some socially constructed norms, beliefs, values, and definitions (Suchman, 1995, p. 574).

There are significant advantages of digital platforms when it comes to business. They can achieve comprehensive and fast scalable network effects (Viitanen et al., 2017; Kääriäinen et al., 2021). Also, digital platforms cross traditional barriers of competition (Van Alstyne & Schrage, 2016; Kääriäinen et al., 2021). Van Alstyne and Schrage (2016) note that they remove transaction costs. Moreover, digital platforms bring buyer-side users and supply-side users together very effectively (Kääriäinen et al., 2021). Especially firms that implement service-dominant logic enabled by platform, creating effectively continuously cumulative customer value, are gaining the most growth and efficiency. It can be said that the platform economy is the most successful business paradigm at this time. First, it makes new growth with service-dominant logic and converts goods to components of services. Second, it is structurally compatible with digital technology, and with phonemes, it creates immediate use and value creation, increasing efficiency. Third, it bypasses competing structures because it serves the end user as directly as possible and thus quickly wins the new marketplace. (Viitanen et al., 2017)

Also, platforms have at least four different kinds of currencies: attention, data, users, and money (Van Dijck et al., 2018). Also, actors have a cumulative and value-conveying resource: data, digital information, and technologies that seek to refine it, such as automation and software (Viitanen et al., 2017). However, according to Koponen et al. (2019, p. 144), not every advantage can be transformed into comparable currencies. They note that (p. 145) reputation is one of the advantages which is difficult to measure in money, however, it has a direct impact on the impact model. The key factor strategically is to consider how much these actors are open to the involvement of other parties (Eisenmann et al., 2008), such as how Apple Store manages the offered apps.

Also, according to Garud et al. (2020), it is key that digital platform firms manage to build an ecosystem of users and service providers fast on entry. They note that these firms must also build relationships with local regulators, social groups, and administrators to gain acceptance. According to Viitanen et al. (2017), customer value creation models and demand can be analysed in the framework of key trends and drivers of change. Thus, they note that platform ecosystem developers need to understand the visions and expectations of all groups considering future service needs. It is typical for companies and their value chains to have multiple options to capture and share value, which is why platforms must usually integrate with them (Kääriäinen et al., 2021). The value proposition is part of the Osterwalder and Pigneur (2010) business model canvas. They describe it as the value that the company wants to deliver to the customers, which problems of customers are wanted to solve and how to make them satisfied with providing the product or service.

2.2 Crowdwork mechanisms

This section provides insight into the prior crowdwork governance and traditional governance literature. First, components of governance and the definition of crowdwork governance are presented. Then control and coordination mechanisms of crowdwork governance are illustrated. A figure of crowdwork governance is shown to summarise the prior findings of the literature.

2.2.1 Definition of crowdwork governance

Governance refers to coordinating and controlling (Mintzberg, 1993). Governance consists of multiple control and coordination systems, such as work practices, standards, and policies (Deng et al., 2016, p. 281). Governance can be described alternatively to coercive power as a combination of trust and authority when coordinating intended practice (Gol et al., 2019). Similarly, Kinder et al. (2022) describe governance as not a

top-down view but a street-level view that empowers local users and providers. They emphasise self-practice rather than central governance imitation of Richardson et al. (2018). Also, they note that governance-as-legitimacy is localised with emotional-cognitive practices and learning. According to Piore (2011) and Kinder et al. (2022), governance is more than rules, processes, standards, and structures. According to them, it can be seen as legitimacy. They note that their concept of governance as legitimacy is based on the logic of practice, such as everyday decisions, actions, and interpretations, that over time becomes informal governance. They note that governance-as-legitimacy requires pragmatic usefulness, whereas rational rules can be applied consistently to the situation.

Eisenhardt (1985) has defined the well-known formal and informal control strategies, which can be used through quality control and reputation control mechanisms (Schreiecket al., 2016). Formal control is accomplished with performance evaluation (Eisenhardt, 1985). In behavioural control, the controller monitors the behaviour of the controlees and rewards them according to their compliance with the procedures (Kirsch, 1997). In outcome control, the controller evaluates the performance of the controlees and rewards them according to their achieved outcomes (Eisenhardt, 1985). Informal control can be performed by minimising differences in preferences between members of an organisation (Eisenhardt, 1985). In this case, members have internalised the organisation's goals and are working together to achieve them. That can be achieved through several informal control mechanisms, including affirmative human resource policies, team building, training, and socialisation (Kirsch, 1997).

Drawing on the governance model of De Haes and Van Grembergen (2006), governance can be described as consisting of structure, processes, and relational mechanisms. Figure 4 shows the components of governance. Governance structure refers to the hierarchy of committees, boards, or forums responsible for managing and monitoring the delivery of products and services (Grant et al., 2007). Also, it is referred such and governance archetype (Weill & Woodham, 2002). This study uses the term governance

structure. Governance structure describes committees' organisational layers and roles (Grant et al., 2007). Governance elements are described in the prior research, and they include the following: setting direction, aligning strategy, managing effects, managing performance, control, and compliance, managing transformations, managing relationships, and value management (Conference Board of Canada, 2005; Grant et al., 2007). Relational mechanisms include active participation and collaboration among principal stakeholders (De Haes & Van Grembergen, 2006; Grant et al., 2007).

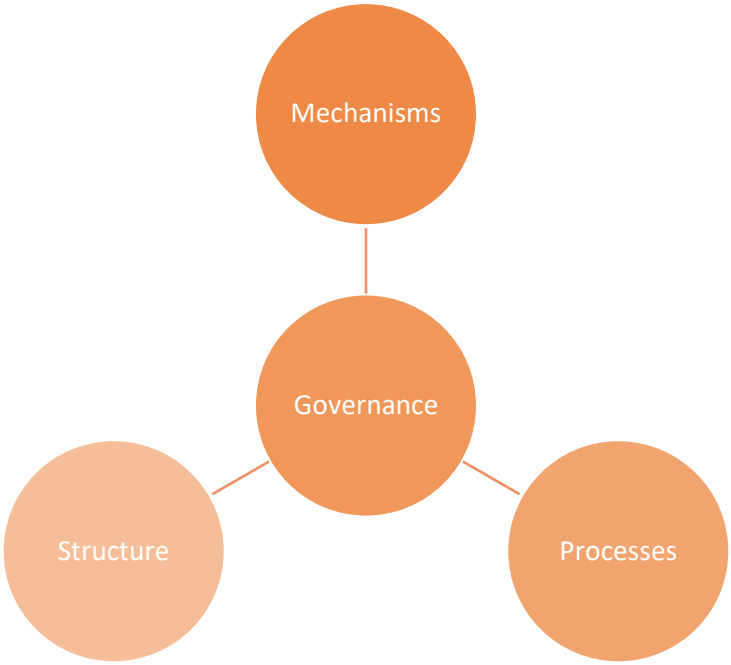

Figure 4. Components of governance.

Crowdwork is digital labour work (Berg et al., 2018). It is digitally mediated employment of distributed independent workers who perform tasks online for a fee (Gol et al., 2019). Crowdwork refers to a job that an employee, freelancer, or a firm performs and outsourcing it to a generally large group of individuals "crowd" through an open call, usually on the Internet, and it is typically cheap, on-demand labour (Berg et al., 2018). In addition, crowdwork operates through platforms while governance mechanisms orchestrate and facilitates the work (Gol et al., 2019). It is quite a novel phenomenon with the capacity to provide strategic value for job providers and workers and the ability to impact

contemporary working arrangements (Forman et al., 2014). Crowd workers can be from diverse geographic areas, which enables the possibility to accomplish projects throughout the day and quickly (Berg et al., 2018). Crowd workers can seek tasks from different requesters and receive payment for their work through a platform that is either web-based which gives tasks to the crowd, or directly to individuals with the use of a marketplace (Berg et al., 2018). Platform has no obligations to the crowd workers, and contracts are made as worker enables to get tasks (Berg et al., 2018). However, workers' treatment has also caused challenges (Deng et al., 2016).

According to Berg et al. (2018), crowdwork is one form of digital labour work. They describe that even though most digital labour tasks are assigned to individuals, such as transportation and cleaning, the work could be given to crowds, such as local micro-tasking. Because crowdwork is a form of digital labour work, it is justified to use crowdwork governance as a base when trying to form a theoretical framework for digital labour work. However, this study focuses more on local-based applications, which provide work for people in a specific geographic area. Still, crowdwork governance can be used as a base to form an understanding of both kinds of digital labour platform governance mechanisms. This thesis considers digital labour platforms' general governance, including web-based and location-based digital labour.

Also, in the digital area of governance, collaborative data governance networks are a key factor for the successful generation of quality information for gross-boundary services (Chen & Lee, 2018). The linkage between governance, management, and performance is a key area of research in the network management literature (O'Toole, 2015). Network management literature has emphasised structural characteristics that help to define relevant management activities (O'Toole, 2015; Provan & Lemaire, 2012). They include operational authority identification, gathering organisations and individuals for network governance (i.e., boards and committees), prior history of collaboration, and communication mechanisms and channels (Agranoff, 2007).

Moreover, network management impacts performance (Meier & O'Toole, 2001; McGuire & Silvia, 2010). Network management activities can include key members' activation, support and commitment to mobilising, framing key issues and objectives, and synthesising diverse interests (McGuire, 2002). These activities have generic network management goals, including building mutual trust, generating shared understanding and objectives, and wide distribution of resources (Chen & Lee, 2018). According to Provan and Milward (2001) and Chen (2008), network performance can be measured with process-oriented and result-oriented outcomes. They state that result-oriented outcomes can be, for instance, the number of job placements in a job-training organisation's network. Whereas process-oriented outcomes refer to working with increasing mutual trust, social capital, and shared understanding. They note that these performance measures must align with a network's goals. Provan and Milward (2001) also state an important perspective of network performance and the level at which the performance is measured. They emphasise the importance of differentiation of network effectiveness at individual, program, and community levels and caution considering potential trade-offs between these levels' performance scores.

However, Kinder et al. (2022) argue and find evidence that the network management approach (Kooiman, 2003; Klijin & Koppenjan, 2014) is not relevant as it used to be since it assumes top-down imposition of governance and controls networks centrally. They argue that governance, for instance, in local public services should be approached as ecosystems when it has been approached as networks. Whether governance is approached through a network or ecosystem, it frames value-creation activity (Kinder et al., 2022).

Also, there is a distinction between centralised and decentralised governance, which has theoretical and practical significance when considering crowdwork governance. The degree of centralisation refers to how much governance, such as control and coordination systems, of crowdwork is centralised or decentralized (Scholz, 2016). For instance, distributed architectures such as peer-to-peer networks and blockchains provide

infrastructure for decentralised crowdwork (Tate et al., 2017). However, based to Gol et al. (2019), crowdwork governance is usually centralised, and they find no samples for completely decentralised crowdwork governance based on the literature review. The degree of centralisation moderating effect emphasises that the control mechanism is more important for effective centralised crowdwork governance, whereas the coordination mechanisms are more important for effective decentralised governance (Gol et al., 2019). Coordination positively impacts effectiveness in decentralised crowdwork governance, which might have problems with process functionality, perturbations, and difficulties in consensus decision-making (Whiting et al., 2016). Although crowdwork governance is mostly centralised, decentralised governance architecture is palpable with new technologies such as blockchain (Tate et al., 2017). Thus, governance challenges especially considering coordination, might increase and be key for ensuring strategic value (Gol et al., 2019). Strategically, governance enhancing workers' quality and scalability can improve the organisation's dynamic capabilities (Teece et al., 1997).

2.2.2 Governance mechanisms

Governance comprises various control and coordination mechanisms (Deng et al., 2016, p. 281). In crowdwork governance literature, control mechanisms include quality control, reputation control mechanisms, and accountability. The coordination mechanisms are presented, including task, incentive, and contract management. Figure 5 illustrates the crowdwork governance mechanisms.

Quality control consists of evaluation schemes that evaluate the degree to which the work meets work requirements and specifications (Agrawal et al., 2015). Quality control is performed when the controller monitors workers' compliance with organisation standards in centralised governance (King, 1983, p.20). In decentralised governance, quality control is performed with consensus evaluation of workers' compliance to collectively agreed standards, and incentives are required to keep to the commitments (King, 1983). Quality control is a form of formal control (Kirsch, 1997).

Reputation System of Workers can be described as the efficiency of the reputation scheme, referring to how much the system can motivate workers to comply with procedures and be competent (Whiting et al., 2016; Gol et al., 2019). Its form is an informal control method (Eisenhardt, 1985; Kirsch, 1997) that motivates workers to comply with the procedures. These can include such as rating algorithms (Boudreau et al., 2016), activity logs (Gol et al., 2019), and feedback from job providers to workers (Whiting et al.,2016). Reputation systems indicate the worker's performance (Whiting et al., 2016) and a control instrument to reinforce compliance (Gol et al., 2019). However, online reputation systems could motivate threats and bribes to enhance ratings (Horton & Golden, 2015). Thus, the reputation system should effectively apply informal social control that positively impacts the overall control effectiveness, since it motivates workers to be competent and comply with the procedures (Gol et al., 2019).

Accountability of Job Providers can be described as a degree of answerability of job providers, referring to how much the job provider can describe their decisions and actions considering the submitted work (Wood & Winston, 2007). It is an administrative control that motivates job providers to compliant behaviour (Gol et al., 2019). It ensures job provider identity verification and that their actions toward workers are responsible (Gol et al., 2019).

Coordination system mechanisms are such as attracting job providers and workers with dependencies management in crowdwork activities (Crowston, 1997). Coordination is "the act of working together harmoniously" (Malone & Crowston, 1990, p. 5). However, in classic organisational research, control and coordination are often intertwined and might be hard to distinguish. For instance, Mintzberg (1980) describes five ways to make coordination easier: direct supervision, output standardisation, work process standardisation, skill standardisation, and mutual adjustment. However, there is an overlap in output standardisation, direct supervision, and work process standardisation with formal control mechanisms (Gol et al., 2019). There is also an overlap in skill

standardisation with informal control mechanisms (Gol et al., 2019). Mutual adjustment, which refers to workers coordinating their activities using informal communication (Mintzberg, 1980), works as a coordination method (Gol et al., 2019). Coordination methods manage task and resource dependencies and are selected as suitable for the process (Crowston, 1997). Crowdwork environments require the division of tasks into subtasks and demand interaction, which is why additional activities not covered in formal or informal controls are needed (Gol et al., 2019).

Task Management refers to coordinating interdependencies between tasks with diverse characteristics, such as task diversity, task clarity, and job autonomy (Crowston, 1997; Gol et al., 2019). It includes activities such as subtask management and subtask distribution between workers with diverse competencies and capabilities (Gol et al., 2019). It can also enable mutual adjustment among workers (Mintzberg, 1980). Related to task management, Locke and Latham (1990) note that goal setting can impact individuals' behaviour since a specific high goal can lead to high performance than not setting a goal.

Incentive Management describes managing governance dependencies between workers' performance and their rewards and incentives (Gol et al., 2019). It can increase workers' participation and improve work practices since it distributes incentives to benefit both job providers and workers (Vakharia & Lease, 2015). The effect of financial incentives varies in enhancing workers' performance quality while improving internal motivation. For instance, through non-financial rewards and credits, the importance of tasks and the atmosphere of collaboration have been shown to have positive impacts (Mason & Watts, 2009). According to Kingsley et al. (2015), financial incentives are not necessarily improving work quality. Incentive management also consists of clear communication of the kind of behaviours that are desired (Gol et al., 2019). Incentive management includes, for instance, making decisions that are coordinated to how much incentives should be used individually or in combination and decisions of internal or external rewards and their management for competing impacts (Vakharia & Lease, 2015).

Contract Management refers to how much work contracts manage interdependencies among job providers and workers (Agrawal et al., 2015; Vakharia & Lease, 2015). It relates to coordinating agreements consisting of work terms between workers and job providers (Gol et al., 2019). It manages worker dependencies, task payment conditions, and rules (Malone & Crowston, 1990). Contract management includes selecting workers, often with a multi-stage process, consisting of workers deciding if they want to offer their services and job provider deciding which workers they choose (Malone & Crowston, 1990). Contract management is necessary for generating actionable work plans and setting rules, which are the basis of compliance verification in the control system (Malone & Crowstone, 1990). It coordinates the planning of the work and terms of a job and can consist of general terms and conditions, fixed price boilerplate contrasts, or contracts with specific rules and conditions (Agrawal et al., 2015; Vakharia & Lease, 2015). For instance, it could consist of a set fee for routine work but no contract or setting two contracts for an hourly wage and fixed price (Agrawal et al., 2015; Vakharia & Lease, 2015).

Value propositions of job providers include great quality of work, low labour cost, fast delivery time, workforce scalability, and work provider reputation (Gol et al., 2019). Quality of work refers to how much the submitted task meets the job provider's requirements or specifications (Sarsua & Thimm, 2014). Well-managed tasks, detailed task descriptions, and quality control can increase work quality (Harris, 2015). Cost of labour refers to the financial compensation the platform pays supply-side users when a work task is accomplished (Agrawal et al., 2015). Work delivery time is time that it takes supply-side users to complete a task (Rzeszotarski & Kittur, 2012). Scalability of the workforce refers to the job provider's ability to adjust the size of the workforce to fit the market demand fluctuations (Alonso & Mizzaro, 2012). Reputation of a platform owner refers to the job provider’s standing among the supply-side users as workers (Brawley & Pury, 2016). Currently, there is no known functionality to capture job providers' reputations (Gol et al., 2019). Information on the job provider can be formed via forums where workers evaluate job providers (Brawley & Pury, 2016). The degree of routinisation

refers to how repetitive the task process is with simple instructions and needs minimal individual creativity (Buettner, 2015). Governance challenges might differ in routine and creative work (Brawley & Pury, 2016). Workers' activities, such as problems in quality control and task management, might affect job providers' ability to achieve lower costs, fast delivery, and great quality results (Deng et al., 2016). These challenges appear to be related to governance, even though there is little research describing that (Gol et al., 2019).

Figure 5. Crowdwork governance.

2.3 Theoretical framework: Platform Workers Governance Mechanisms in Digital Platforms

This section combines two streams of the study: digital platform and crowdwork governance mechanisms. This chapter describes prior research on platform governance, even though there is not much research on the subject. A framework of the platform governance mechanisms is constructed to illustrate how to control and coordinate platform workers in the platform.

Both Barney (1991) and Li et al. (2019) consider platform governance as strategies a digital platform firm develops and implements to create value. Multiple market frictions, such as externalities (costs or advantages that an agent unintentionally affects other agents) and information differences (one transacting participant possesses information advantages over another), raise problems affecting the deployment of the platform but also may cause issues to agents already on the platform when shaping their distributed actions and innovations (Boudreau & Hagiu, 2009). Thus, platform governance can be described as consisting of a set of comprehensive rules, restrictions, and incentives that the platform owner can develop and use to address market frictions in orchestrating and enabling co-specialized capabilities (Boudreau & Hagiu, 2009; Zhang et al., 2020).

Also, prior research has discussed crowdwork platform governance issues. However, the definitions of the terms have been broad and systematic study has been limited (Nickerson et al., 2017). According to Gol et al. (2019), literature control is often mentioned in platform and crowd governance (e.g., Tiwana et al., 2010), but coordination is rarely mentioned. Gol et al. (2019) research emphasises the importance of both control and coordination in crowd governance.

According to Chen et al. (2022), related governance mechanisms for platform owners to govern supply-side users include access control, output control, provision of information and giving rewards. Manner et al. (2012) define platform governance effectiveness based on control and coordination for platform resources and activities to achieve the

goals and results, such as stakeholder interests. Similarly, Gol et al. (2019) describe that crowdwork platform governance consists of two fundamental mechanisms: control and coordination. Adding to the control mechanisms noted earlier in the literature review, digital platform control consisting of corrective actions and verification, has a more positive impact on effectiveness when governance is centralised, which is more likely to have problems with power balances and use (Azfar et al., 2001). Platforms coordinate autonomous innovators with standardised interfaces, not with hierarchy or market, such as many supply-side users can join the platform ecosystem to create complementary products for users (Cennamo, 2018). Open governance refers to the degree to which the platform owner has distributed important decisions regarding the platform interfaces and attributes (Boudreau, 2010).

Moreover, platform owners can have specific instruments or architectural features to achieve the desired results of platform governance (Chen et al., 2022). Platform governance and architecture are key factors to value creation since they define the value-creating activities that the platform encourages, who can join the platform and when to perform these activities, how much the platform owner interferes with these activities, and how the platform owner can capture the share of the jointly created value (Hagiu & Wright, 2019). Value-creating activities include product development, interactions, and transactions (Hagiu & Wright, 2019).

A digital platform governance is somewhat different to traditional governance, and it is performed mainly through digital architecture features (Chen et al., 2022). According to Li et al. (2019), firm-specific advantages are critical both in platforms and traditional businesses. They describe that for platform firms, value creation involves orchestrating the platform and its actors, referring to creating an ecosystem. Governance thus considers the ecosystem governance mechanisms for firm collaborative relationships considering the incentives and value creation in contrast to the concepts of traditional multinational company governance that considers the control and value capture (Li et al., 2019).

In contrast to the traditional buyer-supplier networks of intangible assets that a firm owns and controls, digital platforms attain resources from unknown supply-side users beyond its direct control (Parker et al., 2016b). Henfridsson and Bygstad (2013) denote that to understand the dynamics of digital platforms better, the focus should be on the boundary resources of the platform rather than just the core of the platform. Boundary resources consist of software tools and regulations that facilitate arm's length relationships between a platform provider and application developers. Eaton et al. (2015) develop this idea by conceptualising platform dynamics. Their unit of analysis is decentralised actors who together regulate border resources. This approach to analysis differs from the ownership-centred views found in the traditional innovation management literature, which considers that platform owner is a keystone organisation managing several complementary factors (Iansiti & Levien, 2004a; 2004b).

This study generates a theoretical framework for digital labour platforms based on the crowdwork governance literature and prior literature on platform governance. The control mechanisms consist of access control (Chen et al., 2022; Tiwana, 2015; Boudreau, 2010; Parker et al., 2016b), reputation monitoring (Chen et al., 2022; Bolton et al., 2013; Yi et al., 2019), quality control (Chen et al., 2022; Kääriäinen et al., 2021), and behavioural control (Chen et al., 2022; Wareham et al., 2014; Reischauer & Mair, 2018; Zhu & Iansiti, 2019). Access control is an important part of digital platform governance (Chen et al., 2022), so it is added to the framework of governance mechanisms.

Access control refers to the mechanisms determining who can join the platform (Chen et al., 2022). These can include screening mechanisms, restrictions on the use of boundary resources, and access fees (Chen et al., 2022). Platform owners can implement different screening mechanisms to determine who can join the platform (Tiwana, 2015). Management of platform infrastructure enables platform firms to have rights for gatekeeping as it can decide which actors can join the platform, and thus they have power over supply-side users (Boudreau, 2010; Parker et al., 2016b).

Reputation monitoring is related to output control, which refers to evaluating and monitoring supply-side users' outputs and outcomes, according to Chen et al. (2022). The term reputation system, mentioned earlier in the literature review, is related to this. Chen et al. (2022) describe that reputation monitoring can consist of reputation scores, online reviews, and ratings. According to them, it can also include sellers' transaction records consisting of order defect rate, cancellation rate, and late shipment rate. There are various reputation systems among platforms. Several research considers effective feedback systems efficacy to the platform owner evaluation for supply-side users' performance (Bolton et al., 2013; Yi et al., 2019). For instance, rating algorithms (Boudreau et al., 2016), activity logs (Gol et al., 2019), and job providers' feedback (Whiting et al., 2016) can be used to derive reputation rates. Also, for instance, digital platforms such as Amazon, Taobao, and eBay use multiple feedback mechanisms to provide reputation scores of the supply side users (Fan et al., 2016), reviews, and online ratings (Lu et al., 2013), which enables customers to share their experience and opinions about the product or service offerings of supply-side users'. In addition, platform's reputation has monetary value for the platform (Koponen, 2019, p.146).

According to Koponen (2019, p.145), using reviews of platform supply and demand side users is key to building a reputation. If a supply-side user receives negative feedback because of the low quality, platform owners could downplay the supply-side user (Chen et al., 2022). For instance, buyers can rate sellers based on the item description, quality of communication, shipping time, shipping cost, and so forth on eBay (Chen et al., 2022). Platforms could control suppliers with reviews that users have given to the platform suppliers, such as providing more customers to the best-reviewed suppliers and denying access to the platform for some of the suppliers based on reviews (Koponen, 2019, p. 145). Moreover, according to Kuhn and Maleki (2017), the platform can use algorithms to select workers with high ratings to receive notifications of newly posted jobs before others and access the desired assignment. Thus, reviews can be transformed into business for suppliers and lead to supply-side users' self-correction to get better reviews and

work as an indirect mechanism in which platform owners can use output control to improve quality and create value (Chen et al., 2022).

Reviews have an impact on buyers' behaviour. Users on digital platforms could mainly base their decision on reviews (Koponen, 2019). Buyer views supply-side users with poor ratings negatively (Huang et al., 2017), thus those supply-side users probably try to correct their actions (Siering & Janze, 2019). They may try to provide positive signals to potential buyers (Barlow et al., 2019). Therefore, the self-correction that supply-side users undertake forms the secondary mechanism for platform owners to use output control for complement quality and value creation (Chen et al., 2022). Whereas if supply-side users gain good reviews, users usually prefer them, and those reviews have a long-time positive effect that monetary purchases have not, such as those supply-side users could raise their prices compared to other competitors (Koponen, 2019, p. 146).

According to Koponen (2019, p. 145), the reputation economy's advantages are its ability to attain its service promise, service development in the way that it answers to users' wishes, and building trust between actors on the platform, which can be otherwise difficult objective since the platform is not itself doing the concrete work of supply-side users for the service. However, according to Koponen (2019, p. 145), the platform can keep the promise with the mechanism of the reputation tracking. A key factor in building trust is that users can send feedback and comments, notes Koponen (2019, p. 146).

Quality control mechanisms for digital platforms have little research, but it is also related to output control as reputation monitoring (Chen et al., 2022). According to Kääriäinen et al. (2021), users usually relate the platform quality to the ease of use of service. They say that it is important that it is easy to find interesting products and services since it encourages to use the platform. Quality control has been described earlier in the literature review. Metrics to evaluate supply-side users' work quality could include transaction records (order defect rate, cancellation rate, and late shipment rate (Chen et al., 2022). Since digital platforms create value through facilitating transactions

between actors (Lee et al., 2015), to achieve that, platform owners need supply-side users on the platform to provide desirable offerings to customers and customers to honour what they provide (Zhu & Iansiti, 2012). These arguments emphasise the importance of output control to platform owners when assuring that supply-side users deliver satisfactory performance and help to minimise adverse selection (Chen et al., 2022).

Chen et al. (2022) state that digital platforms can also use **behavioural control** for supply-side users. According to them, it refers to the platform owner deciding what kind of interactions are allowed in the platform and restraining supply-side users' misbehaviour. Since supply-side users are diverse with different incentives and knowledge, there is no guarantee that they act right if not monitored, and they might even cause damage to the platform (Wareham et al., 2014). Because supply-side users have a high cost of information to a transaction, might supply-side users of low quality be motivated to provide false information to manipulate feedback (Lappas et al., 2016). Also, if the competition is high, it might provoke supply-side users to manipulate their competitor's feedback (Luca & Zervas, 2016). Therefore, mechanisms to restrict manipulation have been implemented, such as sanction measures to detect misbehaving supply-side users (Reischauer & Mair, 2018). Platform owners could, for instance, monitor and restrict the exchange of information between supply-side users and demand-side users (Zhu & Iansiti, 2019).

There is little prior research on digital platform coordination mechanisms. However, earlier in the literature review, the crowdwork coordination mechanisms consist of **task management**, **incentive management,** and **contract management**. Similarly to contract management governance, Viitanen et al. (2017) state that the efficiency and growth of digital platforms are based on the digitalisation of processes and standardisation since it creates efficiency and predictability for customers. They state that standardisation concentrates on data structures, technical interfaces (APIs), contracts, terms of use, customer experience, and service pricing. While some traditional companies may negotiate contracts with each customer or supplier individually, digital platform companies

generate certain standard practices allowing anyone who accepts the terms to join the platform (Viitanen et al., 2017).

Platform worker training is used in this thesis as a driver for coordination mechanisms since it was a subject that was considered in prior research. However, it has not yet been identified as a governance mechanism. For instance, it is mentioned that it is important to ensure the quality of the parties (Kääriäinen, 2021) and empower them (Van Alstyne & Schrage, 2016) since value creation happens through actors (Parker et al., 2016b). Moreover, platforms gain distinctiveness and user growth if platforms can attain high-status supply-side users, which are a common legitimacy source in platform markets (Taeuscher & Rothe, 2021). However, platforms gain an advantage of a moderately distinctive positioning only after they have gained a certain amount of legitimacy (Taeuscher & Rothe, 2021). Thus, it is suggested as a hypothesis that training could be a governance mechanism in digital labour platforms.

Moreover, little is known about the metrics platform owners use to govern and evaluate the supply-side users' results. Scholars have shown interest in understanding the platform owners' use of data analytics and data network effects, where the users gain more value as the platform learns more of the user data it collects (Gregory et al., 2021). However, some metrics are gathered in the framework found in prior literature research. Still, there is little empirical research on the subject.

Based on the literature review, the framework of platform workers' governance is formed. Figure 6 shows the study framework. The results of platform workers are described here as the quality of work, delivery time, and reputation of the supply-side user, based on Gol et al. (2019) value propositions of crowdwork platform. To govern these results, this study suggests considering control and coordination mechanisms based on prior research as described (Deng et al., 2016; Scholz, 2016; Gol et al., 2019; Chen et al., 2022). To combine Gol et al. (2019) framework of crowdwork governance systems and Chen et al. (2022) described mechanisms of platform governance, this study forms a

framework that considers platform workers' governance mechanisms to consist of access control, quality control, reputation control, accountability control as control mechanisms and task management, incentive management, and contract management as coordination mechanisms for platform workers governance. There is a possibility that more governance mechanisms and metrics will arrive from the study.

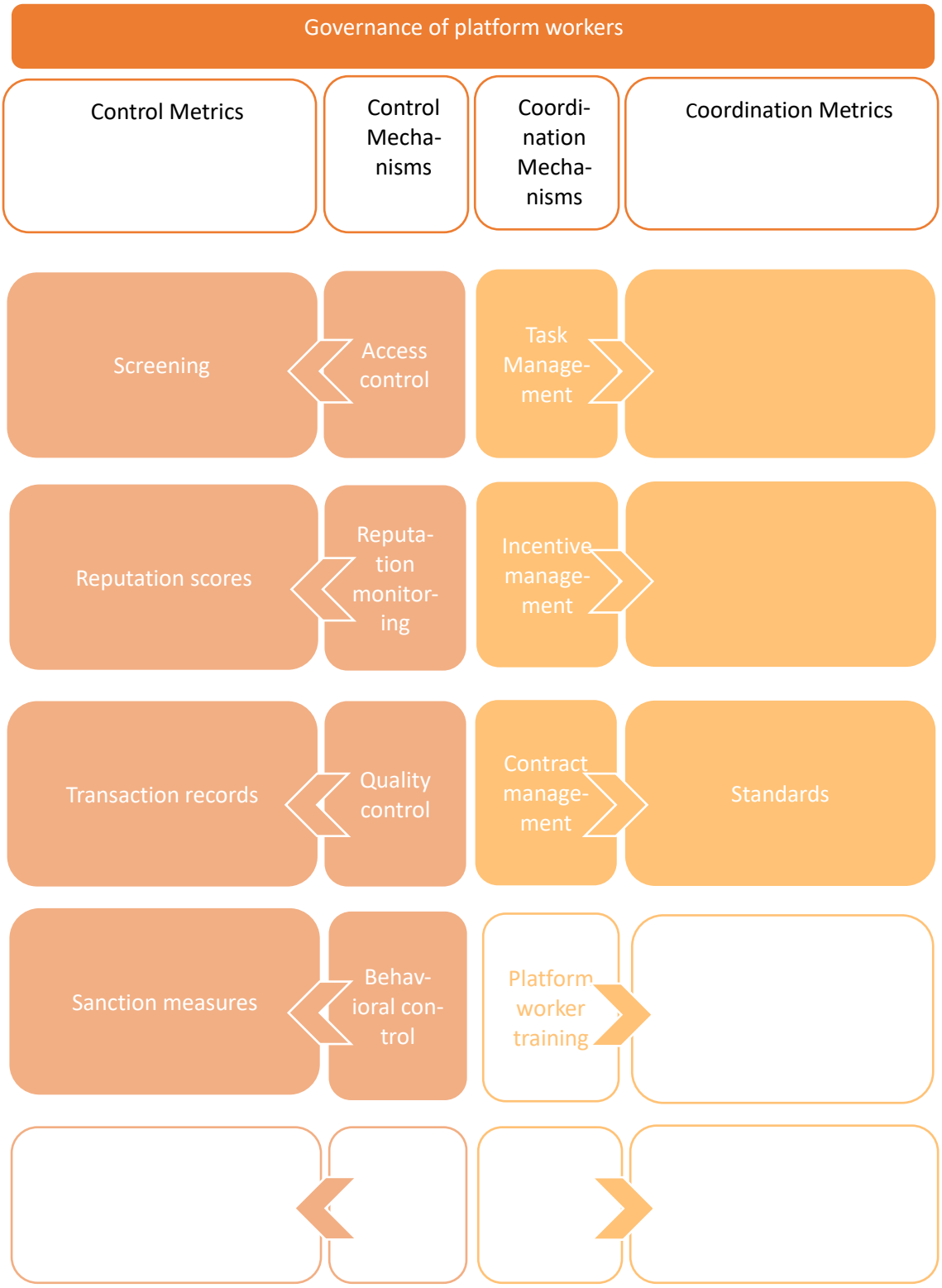

Figure 6. The framework of platform workers' governance mechanisms and metrics in digital platforms.

The autonomy of workers can impact governance mechanisms' effectiveness. For instance, the effectiveness of the reputation feedback might also be impacted by the worker's autonomy (Kuhn & Maleki, 2017). According to them, when considering the relationship between the platform worker and the platform firm, the autonomy of a platform worker varies between firms. Moreover, according to them, autonomy can be shown in terms of control, such as control over work assignments, amount of payment, customer interactions, and working conditions. They describe that in some platforms, workers can search and choose jobs to pursue and the amount of payment, whereas in other platforms or customers determine it. Also, according to Li et al. (2019), because of the supply-side users' autonomy, they can decide whether to associate or dissociate themselves from a platform, which is one of the reasons why platform firms cannot rely on relational or contractual governance.

In addition, the degree of control varies between platform firms since their structure and operational decisions shape their governance, as Kuhn and Maleki note (2017). They describe that when platform workers have some autonomy in terms of schedules, platforms have a variety of control over the allocation of decisions, authority, clients, and the amount of payment to workers. According to them, platform workers with substantial autonomy to choose the terms and process of their labour are close to independent, whereas those who are more actively controlled are more like employees of the platform firm. Moreover, the interdependent multilateral relationships between supply-side users might cause friction in collaboration (Adner, 2017), which only a scatter of researchers have considered (Hagiu, 2014). However, platform governance can create positive indirect network effects among supply-side and demand-side users (Boudreau, 2012; Zhu & Iansiti, 2012).

As mentioned in the literature review, digital platform firms are dependable on user growth to maintain or grow their market position (Leong et al., 2019). Digital platform firms do not know beforehand the resources and capabilities needed to be leveraged (Furr & Shipilov, 2018). Thus, developing and growing the network requires actors'

resource orchestration (Van Alstyne & Schrage, 2016). The positive externalities that the digital platform firm creates for various participants materialise with the active orchestration of the platform firm (Hagiu, 2014). Li et al. (2019) state that it is a key factor for the platform ecosystem's success. Hence, platform firms should broaden, rather than restrict, the group of transaction partners to increase network effects (Boudreau, 2012). That also increases knowledge spillovers between the supply-side users (Parker & Van Alstyne, 2018).

Also, many of the location-based labour platforms are using algorithms to assign tasks to workers. Regarding algorithm-based ranking in digital platforms, platform owners should consider the transparency of their actions. The Commission directive also suggests improving the platform's algorithm transparency and ensuring human monitoring (EURES, 2022). National authorities might often have difficulties when it comes to obtaining information from the platforms and platform workers, and the aim is to increase the transparency of platforms by requiring them to give certain information considering the platform workers to national authorities (EURES, 2022).

3 Methodology

The research aims to study the digital labour platform owner's mechanism and metrics used to govern supply-side users, who provide the service on the platform, also referred to as supply-side users, which formed the research question:

What governance mechanisms and metrics do digital labour platform owners use, and how are they used to govern platform workers *in digital labour platforms?*

The research question has been a structure for the methodological choices of this research. This chapter will present the methodological choices made. First general research concepts are presented, including research philosophy, strategy, and methods. Then more specific subjects of the methodology are presented, including the case selection, data collection, validity, and reliability.

3.1 Research philosophy

Research philosophy refers to the development of knowledge and its nature (Saunders et al., 2009; Eriksson & Kovalainen, 2015, p.12). According to Saunders et al. (2019, p.130), it indicates beliefs and assumptions of knowledge development. According to Eriksson and Kovalainen (2015, p. 11,) research philosophy is considered to guide the researcher in knowledge production through the research process. They describe that fundamental concepts of research philosophy in social science include ontology, epistemology, methodology, and methods, which relate to each other.

Ontology refers to the ideas about nature and relationships among people, society, and the environment in general (Eriksson & Kovalainen, 2015, p.14). According to Kovalainen and Eriksson (2015, p.14), ontology can be approached through objectivism and subjectivism. The objectivism approach views concepts and entities' social reality as an independent part of individuals (Eriksson & Kovalainen, 2015, p. 15; Saunders et al., 2009,

p.110). In contrast, subjectivism describes and understands reality based on individuals' perceptions and experiments that might differentiate between individuals and change (Eriksson & Kovalainen, 2015, p. 15; Saunders et al., 2009, p. 110). Eriksson and Kovalainen (2015, p. 15) write that this kind of conceptual understanding of reality can be shared between people. According to them, ontological assumptions can cover all theories and methodological positions. Qualitative research usually uses a subjectivist view of ontology, referring to that the reality of the individual is the result of social and cognitive processes. In contrast, the quantitative research approach to ontology is objectivist, referring that social reality has an independent objective part to an individual (Eriksson & Kovalainen, 2015, p.14). This study uses a qualitative approach, and thus ontological approach is subjectivist. In addition, the phenomenon of the thesis is dynamic and involves a range of relationships among platform actors and their interactions. Due to that, an objective approach to research would be difficult.

Epistemology is close to ontology and thus can be discussed together (Eriksson & Kovalainen, 2015, p.15). According to Eriksson and Kovalainen (2015, p.15), epistemology considers the nature of knowledge and its sources and limits. Also, they note that epistemology can be approached with a subjectivist or an objectivist view. The objectivist approach views that the world is possible to be theory-neutral, whereas the subjectivist approach views the world through individuals' observations and interpretations (Eriksson & Kovalainen, 2015, p. 15). Knowledge is usually based on different and equally legitimate views (Eriksson & Kovalainen, 2015, p. 15). According to Eriksson and Kovalainen (2015, p.15), several schools represent different epistemological views. They note that empiricism can be associated with positivism, in which reality has observable and material things. Positivism considers observing and justifying data and drawing highly generalisable conclusions like laws and results in physical and natural science (Saunders et al., 2009, p. 116). Also, Erikkson and Kovalainen (2015, p.15) note that subjectivism can be associated with interpretivism, in which reality is socially constructed, and knowledge can be reached through social actors. Saunders et al. (2009) note that it considers knowledge truth, even if it is not highly generalisable. This is because not all

knowledge can be highly generalisable and law-like since individuals are too multi-dimensional. Realism considers whether the reality is really what we observe or if it is somehow individually biased, notes (Saunders et al., 2009, p.112- 116). According to them, direct realism refers to how we view the world accurately, whereas critical realism considers that we make it biased. Then they note that there is substantialism associated with critical realism, in which reality is viewed as material, but people are viewed to interpret it. In this research, both interpretivism and critical realism views are used because they suit the research's theme, which is people-oriented and multi-dimensional.

3.2 Research strategy and methods

Research strategy and methods present the practical methodological choices of the research to get valid and reliable answers to the research question. Methodologies and methods refer to how the world is come to know with a more practical view than epistemologies (Eriksson & Kovalainen, 2015, p. 16). Eriksson and Kovalainen (2015, p. 16) write that it is close to epistemology but provides a more practical view and consists of organising principles that guide the research process. They also note that methodology considers how to study a certain problem. Commonly used methods in social science include archival, analysis, survey, and case study (Saunders et al., 2009, p. 8). Embedded research is conducted in this research because there are multiple methodologies and metrics. Methods can include data collection methods, such as interviews and observation, and data analysis methods, such as thematic and narrative analysis (Eriksson & Kovalainen, 2015, 16).

According to Saunders et al. (2009, p.124-127) and Eriksson and Kovalainen (2015, p. 22), there are different reasoning approaches to developing theory, including inductive, deductive, and abductive approaches. The researcher could use also mixed methods (Doyle, Brady & Byrne, 2009). Eriksson and Kovalainen (2015) note that both inductive and deductive approaches are often used in social research. According to Saunders et al. (2019), each approach represents a different way to draw conclusions and describe

the phenomenon with current information. They note that the deduction approach considers the theory the first knowledge source. According to them, the researcher can deduce hypotheses based on what is known in prior research about the phenomenon theoretically. The hypotheses can then be researched empirically, they note. Induction is logic that proceeds from empirical research to theoretical results, they describe. According to them, abduction combines deduction and induction in the same study. It refers to moving from individuals' descriptions and meanings to categories and concepts to build an understanding or description of the phenomenon. This research uses an abductive reasoning approach since the research aims to provide descriptions of the prior theory with collected qualitative data from interviews (Saunders et al., 2009).

According to Yin (2009), a case study is a commonly used research method in social science. According to Creswell (2012) case study analyses people and activities in-depth and detailed. Yin (2009, p. 19, 46) notes that case study can have one or multiple cases, and it can be holistic or embedded. According to him, holistic refers to one unit of analysis, whereas embedded refers to various units of analysis. This research is embedded with multiple units of analysis, which are the different methods and metrics. Because this study considers an uninvestigated and problematic study and aims to reveal new governance mechanisms and metrics, it can also be stated to be revelatory. This study uses multiple cases because multiple cases give this study more information about the subject, and de Reuver et al. (2018) recommend conducting an embedded multiple case study comparing platforms to increase the comparability between the research of digital platforms.

The case study method is selected by interpreting the methods' nature to the aim of the research, and the case study is the most suitable choice. It allows researchers to use empirical data to research contemporary phenomena in real situations (Saunders et al., 2009, p.145). Case study is a great approach to generating holistic and in-depth knowledge using data from various sources (Eriksson & Kovalainen, 2015; Yin, 2009). Eriksson and Kovalainen (2015) state that case study enables diversity in research,

although boundaries of the case study are identified. They note that case study tries to describe and understand the case's logic and not produce statistical generalisation. Case study research considers defining and solving the case (Eriksson & Kovalainen, 2015). According to Yin (2009), it is an empirical inquiry investigating a contemporary phenomenon in real-life.

Eriksson and Kovalainen (2015) state that case study enables diversity in research, although boundaries of the case study are identified. They note that case study tries to describe and understand the case's logic and not produce statistical generalisation. The case study in this study is extensive, referring to that it concentrates on mapping mechanisms used in the case companies to develop, elaborate, and test theory (Hillebrand et al., 2001). The main interest of the research is thus to investigate, elaborate, and describe the phenomenon of the research (Eriksson & Kovalainen, 2015).

3.3 Case selection

In the case selection process, a website (Immonen, J.; 2021, 19. August) that provided a list of digital labour platforms was used to find suitable companies for the research. The suitable firm representatives were asked to be interviewed. Table 1 shows the information about the interviews.

The case firms were selected based on the criteria:

1. The company must have a digital platform for the main business or as part of the business;
2. The digital platform must be a labour platform, which facilitates workers to find a job on the platform, such as gigs, projects, or fixed-term employment;
3. The digital platform must provide governance mechanisms such as evaluation mechanism, algorithm-assisted author selection or communication, and handling financial transactions through the platform;
4. The service provided in the company is a work input.

Also, selected firms were somehow different from each other to increase the variety of potential governance mechanisms used in the platform. Company 1 is a business-to-business company that provides the technology to facilitate coordination between companies, whereas Company 2 is significantly more involved with the platform workers. Company 3 uses traditional and platform-based ways to recruit workers, so it is a hybrid company. It has increased the platform's way of working since 2016 and has a digital labour platform as part of its business. Three companies were selected for the research. Given the scope of the project, three was a reasonable number of cases to select in-depth analysis and draw meaningful conclusions with a reasonable amount of data.

Table 1. Interviewee information.

Company	**Interviewee number, status**	**Interview date, duration**
Ework Group	Interviewee 1, Head of Platform Services	28.4.2022, 40 min
Work Pilots	Interviewee 1, CEO	2.5.2022, 40 min
Bolt.Works	Interviewee 1, CTO Interviewee 2, HR manager	12.5.2022, 50 min 31.5.2022, 50 min

3.4 Data collection

This research uses interviews as a data collection method. It is common for qualitative research to collect data through interviews (Merriam & Tisdell, 2015, p. 108). Based on Saunders et al. (2009), the qualitative data used in this research is based on a small sample collected with interviews, and the results are analysed in-depth. Interviews are positivist in this research, meaning that questions consist of information questions, and very accurate information about the subject is wanted to gather (Stake, 2005).

Merriam and Tisdell (2015, p. 109) note that interviews can vary from structured to unstructured and in between them. Interviews of this research were made as semi-structured. According to Merriam and Tidell (2015, p. 110,111), it refers to an interview with somewhat structured questions, variation in wording and sequence, and it allows response to the emerging situation and new ideas to arise during the interview. This study's semi-structured interview questions included “what” and “how” questions, which were the leading topics to answer. Still, interviewees were asked to give specific information on the subject if more questions arose. That is because of those fits for answering “what” and “how” questions in the research question (Yin, 2009, p. 2).

The questions were planned based on the governance mechanism categories in the literature review, including access control, reputation monitoring, quality control, behaviour control, task management, incentive management, contract management, and training. The interview questions concerned the governance mechanism themes that emerged from the literature review and allowed the discovery of potential new themes that were not mentioned there. Interviewers were asked about the mechanisms they use, how they use them in the case company, and what metrics they include. Interview questions can be read in the appendices section of the study. All the interviews were recorded with the permission of the participants. The interview study was positivist, referring to that interest in interviews was on facts and contained many information questions (Eriksson & Kovalainen, 2015, p. 92).

The interviewees were selected based on their knowledge and status in the case company. It was important to select employees who knew about the governance mechanisms in the case company, worked around them, and perhaps were in the status of making decisions about them. Because only a few people from the companies knew about the subject of this thesis and the time limitations, no more interviews were available from the case companies. Thus, every interview that was given was very valuable in a matter to gain information about the subject. The interviews were collected in May

2022. A total of four interviews were collected for the research. Because of the few interviews, they were analysed in-depth.

Interviews were collected through the online video meeting tool Microsoft Teams due to the geographical locations of interviewees. Video meetings were used to create trust since they are pretty like face-to-face meetings. Interviews were tape-recorded interviews made online with a video component, which were transcribed to include all the words the interviewee said in the interview. The advantage of online interviews is that the interviewer can interview participants from different geographical locations easily, even though there might be difficulties in technology and audio and there is a chance that confidentially is compromised when interviewing online (Merriam & Tisdell, 2015, p.116).

The interviews lasted around 1 hour each and was conducted in Finnish or English based on the interviewee's preferences. The interviewees were encouraged to give detailed answers by asking further questions and clarifications about the subject, as is usual in semi-structured interviews (Eriksson & Kovalainen, 2015, p. 96). This helps interviewees to give detailed and rich answers.

3.5 Data analysis

Data analysis aimed to answer the research question, which worked with the guiding structure and choices. According to Eriksson and Kovalainen (2015) and Merriam and Tisdell (2015; p. 197), qualitative research involves analysing and collecting data simultaneously. They note that the process is iterative since the data is collected and immediately analysed. At the same time the researcher moves through an interview, analyses, and forms further questions about the received information. Eriksson and Kovalainen (2015) describe different types of data analysis, including content analysis, thematic analysis, and discourse analysis. According to them, content analysis is analysing the meaning of words, thematic analysis considers coding the data and identifying themes

and patterns, and discourse analysis refers to the analysis of the importance of communication-based on relation to the social environment. This research uses thematic analysis.

The initial data analysis was made before the interviews by searching companies' web pages to prepare for the interview, make tailored interview guidelines, and verify some of the facts. The data was stored digitally in written form, making it easy to use during analysis. The interviews were transcribed in verbal speech into a text format both with specific software and manually. The raw textual material consisted of 49 pages of re-scripted interviews (12 Calibri). Each interview consisted of a rich amount of information about the subject, and the data has been able to use comprehensively.

The transcripts were then carefully read through. Themes and words were identified and classified by assigning codes. According to Eriksson and Kovalainen (2015), coding makes categories of features, themes, and issues in the data by giving a code to the category. Similarly, Merriam and Tisdell (2015, p. 200) describe coding as assigning designations to data to specific data to be easily retrieved with codings such as words, letters, and phrases. According to them, it is important to code a data set and organise it as a form of inductive reasoning. Concepts in current theory were used to code and analyse data, as Eriksson and Kovalainen (2015) suggest. The data were coded, identified, and similar data were grouped under codes. As Merriam and Tisdell (2015; p.201) recommend, notes were made about the subjects during the analysis. They note (p.211) that the reasoning process goes between inductive and deductive.

According to Merriam and Tisdell (2015, p. 202), qualitative data analysis is inductive and comparative. They note that data analysis can consist of abstract concepts, inductive and deductive reasoning, description, and interpretation. According to them, term category, theme pattern, and finding describe an answer to a research question. After the data coding, categories were grouped by codes and notes about the same subject. The new findings were grouped and categorised based on prior research themes using

more deductive reasoning (Merriam & Tisdell, 2015; p. 211, 2012). The patterns and regularities form categories or themes to organise items (Merriam & Tisdell, 2015; p. 207), and then the categories are tested and confirmed (p. 211). This is shown in table 2 in the findings section.

The data analysis order was submitted according to Eriksson and Kovalainen's (2015) suggestions. First, each case was analysed individually in depth within a case. Then cases were compared and analysed with each other to generate findings. The interpretations were enriched with prior literature, and the conclusions were summarised in the picture in chapter 2.3, which formed a framework for the research and was then completed based on the findings.

3.6 Validity

Validity is a classic evaluation criterion, which describes the level of accuracy of description upon which conclusions are drawn, notes Eriksson and Kovalainen (2015, p. 305). They note that findings should accurately describe the phenomenon referred to and be verified with evidence. According to Saunders et al. (2009, p. 139), validity refers to the findings being what they appear to be. According to Merriam and Tisdell (2015, p. 242), validity consists of internal and external validity.

According to Merriam and Tisdell (2015, p. 242), internal validity refers to the findings capturing what there is and observing and measuring what is supposed to measure. According to Yin (2009, p. 43), it refers to correct and justifiable results achieved when random causes are not affecting the results. The study aimed at internal validity achieved with logical and transparent data analysis. The study used common strategies to check the validity of the results using Merriam and Tisdell (2015, p.245) and Eriksson and Kovalainen (2015, p. 306) recommendations, including multiple methods of data collection. Thus, company webpages were checked to ensure some of the information's correctness. Also, to ensure internal validity, a common strategy member check or

respondent validation (Merriam & Tisdell, 2015, p.246; Eriksson & Kovalainen, 2015, p. 306) was used in the study. According to Merriam and Tisdell (2015, p.246), respondent validation refers to asking for feedback on preliminary findings from the people that were interviewed. They note that it is a very important way of verifying the correctness of the interpretation. This way, it can be verified that the interpretation captures the perspective of the interviews.

In addition, adequate engagement in data collection has used a strategy which refers to the saturation of the data to know how long or how many people need to be interviewed. According to Merriam and Tisdell (2015, p. 249), data saturation means that the same things are coming up, and no new information surfaces when collecting data. Considering the time limits and amount of data, three cases seemed to be a reasonable number. Also, data was quite saturated when similar things came up in different interviews. Also, as Merriam and Tisdell (2015, p.249) note strategy of the researcher's position was used in this study. According to them, it refers to the author being transparent about their biases and assumptions regarding the research. Thus, the assumptions made are articulated transparently so that it would be easier to understand how certain interpretations were made.

Yin notes (2009, p. 43) that external validity refers to the generalizability of the results, which considers the results' ability to be employed in other study cases and concepts. Similarly, according to Merriam and Tisdell (2015, p. 253), it refers to the ability of the findings to be applied to other cases. Case studies are criticised for the limit of comprehensiveness, notes Yin (2009, p.43). That is acknowledged, and thus multiple cases are used, and the study provides value through depth analysis of the case firms. Merriam and Tisdell (2015, p. 256) state that generalizability in qualitative research can be understood in terms of the reader of the study, referring to the fact that the reader decides which study findings apply to another situation. According to them, transferability can be increased with maximum variation in the sample. This was used when selecting the case companies to be somehow different from each other. Case company 1 was

intermediate, with high skill level job requirements; case company 2 was involved more in the platform with low skill level job requirements. Case company 3 was a hybrid operator in the field with both traditional and platform business.

3.7 Reliability

Reliability refers to the level at which research findings can be replicated (Merriam & Tisdell, 2015, p. 250). If the study is repeated using the same procedure, it should give the same results (Yin 2009, p. 45; Saunders et al., 2009; p. 371; Merriam & Tisdell, 2015, p. 250). Merriam and Tisdell (2015, p. 250) state that it is problematic in the social sciences because human behaviour is not a statistic and taking many people's views to the study is not necessarily more relatable than one person's views. Thus, they note that more important in qualitative research is that the results are consistent with the data collected. They state that the strategies that can be used in qualitative research to ensure consistency and dependability are using multiple resources, the investigator's position, peer review, and the audit trail. Numerous resources use, and the investigator's position is already discussed in the internal validity section. According to Merriam and Tisdell (2015, p. 253), the audit trail describes how the author arrived at the results. Thus, in this study, the data collection methods, the way categories were derived, and the way decisions were made through the study are described.

4 Findings

In this chapter, empirical data and findings are presented. The findings are presented based on the empirical data gathered through the interviews and framed toward the framework and theory. The theoretical illustrations enable the study to interpret empirical framings and base the study's discussion section.

The presentation of empirical findings is organised around two control and coordination themes and their metrics based on theory and empirical data analysis. The control mechanisms presented are access control, reputation monitoring, quality control, behaviour control, and activity monitoring. In contrast, the presented coordination mechanisms are task management, incentive management, contract management, and training. Each of these mechanisms and their metrics is illustrated for each case company. This allocation enables the subjects to be covered with concentrated interpretations, which are synthesised in a framework presented in this chapter. Then each case firm's findings, similarities, and differences are discussed.

4.1 Company 1 Ework Group

Ework Group platform was founded in 2000 in Sweden and provided a business-to-business agency for consultants. According to the interviewee, the company has been in the market for over 20 years. Before the platform was established, they handled the service business with their employees who worked as recruiters. The interviewee said it was because of the need “to make our business more efficient”. Their business operates in Sweden, Finland, Denmark, Norway, and Poland with 300 employees.

A business of Ework Group is currently based on the platform, which provides a technical interface for companies to find consultants for their needs. The interviewee describes that building their supplier portal interface allowed thousands of consultant companies to submit their offers and apply to posted positions. According to him, it is also possible

for the consultants “to report their time or sign the contracts or ask any questions they have and so on, so it's like a digital interface”. Their business idea is to help companies to find consultants through the platform and facilitate the participants' communication.

Platform workers of their platform are companies providing consulting services. The interviewee describes that the consultants they recruit can be working in companies or they can be freelancers with their firm. Still, in each case, they must represent their company in the platform since it is a business-to-business platform. According to the interviewee, there are 12 000 consultants on the platform from both small and big companies. The required skill level of work as a consultant is high, usually requiring appropriate education. The interviewee notes that consulting work can include both online and in-location consulting.

4.1.1 Control mechanisms and metrics of Ework Group

Based on the interview, it can be stated that Ework uses some access control mechanisms on its platform. To join the platform, the company must import their VID number as a metric that confirms that they are a registered business. According to the interviewee, “you need to have a valid VID number, so you need to be a registered business, and that is the kind of requirement to join”.

Reputation was not monitored in their platform based on the interview. However, customer companies could monitor the consulting companies with their metrics. According to the interviewee, “[supply side company] can measure and see how those [platform worker] companies perform”. He says for instance, they can measure be company of those is the fastest one to deliver”. According to the interviewee, that data is not shared with other companies, and the measures could be fastness and price.

Quality control was not used on the platform based on the interview, but according to the interviewee, “I know that many clients do that themselves”. Customer companies

must control the quality of the service, and that data is not shared on the platform; as the interviewee says, “It stays with the client. It’s their data“. According to the interview, the platform is not focused on consultants' reputation monitoring or quality monitoring, and “the reason for that this system or this platform is more focused on the cooperation between the companies and to make that efficient and transparent than finding new companies”, and because “we do not want to have too much subjective information, because all those ratings you know five stars”, “is very subjective in some sense and we do not really know what is behind it, especially when it’s people”, and interviewee tells that many possibilities are causing a certain rating rather than just the actual performance of the platform worker, “it could as well be the organisation”.

Based on the interview, there was neither behaviour control on the platform. According to the interviewee, when it comes to the reputation, quality, and behaviour of the consultants, it is not monitored on the platform, at least currently, because it is seen as a subjective opinion and not necessarily representing the actual situation. Also, because of legislation considering GDPR, information sharing should be considered. The interviewee states, “sometimes you are allowed to state a company, and you might not be allowed to give it around a person because then you run into personal data”. According to the interviewee, “we haven't implemented that yet because incorporation here is between companies”.

However, based on the interview, **activity monitoring** was interestingly found as a new mechanism besides the mechanisms found in the literature review. According to the interviewee, “for us, the activity is significant, so I mean there are thousands of pages where you can find consulting opportunities across the world, the only thing that matters essentially is does somebody look at it“ and “way of getting it, you know new data and having people to look there, is to keep them active, so that is the core value for us”, emphasising the importance of keeping people active and having data that is up to date. According to the interviewee platform monitors the activity of users, such as “what people click on, and you know if they are locked in, how often they are logged in, what parts

of the systems are frequently used and so on, and this is information that we use to make the product better essentially". These are metrics for activity monitoring found based on the interview, including what users click on, whether they are logged in, how often they log in, what parts of the system they use frequently, and how many jobs they look at. In that sense, the users' behaviour is monitored, not controlled. The interviewee says that it is important to be easily accessible, and that is through mobile applications and easy-to-use interface, "we also know that activity comes with satisfaction with the product". Also, according to the interviewee, "the more job opportunities there are [in the platform], the more value for the users to look here, so if you have one job per week, why would you even look here and if you have 1000 jobs per week then it feels relevant to look here, so the more data we can have meaning the more jobs we can have, the more active people will be".

4.1.2 Coordination mechanisms and metrics of Ework Group

Based on the interview, task management was used on the platform. The interviewee notes that the platform provides tasks for users to remind them, such as signing contracts, reporting how many consultants work in the firm and documenting their work hours, which can be stated to be a task management mechanism. According to the interviewee, "[consultants] get a task that says, you know now your time report is open. Please go in and submit your time report for the month or something". However, the interview notes it is not measured in the platform if the tasks are completed. Companies can do that themselves. According to the interviewee, the platform provides an interface for signing contracts, finding the number of consultants, a structured recruitment method, and reporting working hours and the cost of the work.

Incentive management was used on the platform based on the interview to encourage users to activity. According to the interviewee, gamification incentivises users to update their profiles and keep them active on the platform. The interviewee notes that related to profile updating, "we will look at different ways of making that easy for [the users]

and creating an incentive for [the user] to do so, so it might be that you know we have this scale that says your profile is 80% done just add your location" and the system would then give the user "thumbs up, and there will be a celebration, so we tried to use this kind of ways to incentivise people actually to contribute with information we need". So, the incentive consists of thumbs-up pop-ups, a percentage scale of how much the profile information is completed. Metrics to control these include technology that monitors how much of the profile is completed. The system notifies if something needs to be filled in the profile and tries to get that information, such as location.

Based on the interview, it can be stated that contract management was also a mechanism used in the platform. Contracts made in the platform are business-to-business contracts, which refer to those consultants hired through business-to-business agreements. According to the interviewee, the platform's technology enables the signing of contracts through the platform and thus facilitates the process. The interviewee notes that the contracts are tailored by the clients, as their clients usually want to define their terms since the work requires a high skill level and, if a problem occurs, they want that the responsibility for it to be directly with the consulting firm and not with the platform. According to the interviewee, "the clients we have, they are usually not open to signing our contractual terms for the delivery because they have very different businesses". Moreover, according to the interviewee, there are also GDPR legislations considering the personal data on the platform. The working time of the consultants is also monitored, as a regulation coming in Sweden, according to which the consultant must be provided with a permanent employment relationship if they are hired for more than two years.

Based on the interview, it can be argued that the platform uses training as a coordination mechanism. According to the interviewee, the platform provides training with the help of the customer success team. They note that the platform also trains the trainers for the user companies, which then train their employees in using the platform. However, the platform has been tried to make as easy as possible to use, so that much

training would not be needed to use the platform, notes the interviewee. In the matter of consultant work, the consulting companies are responsible for the training of the consultants. According to the interviewee, “in general, we measure the number of support cases and stuff like that, which is, of course, an indicator on if they learned, and but it's kind of on that level”. So, the metric used is the number of support cases to indicate that the training has succeeded.

4.2 Company 2 Work Pilots

Work Pilots was founded in 2015 in Finland, and the platform was formed in 2016. It operates in Finland. The interviewee describes that the main idea of Work Pilots is to support young people in getting work gigs through the platform. According to them, the platform concentrates on helping young people with little or no previous work experience get to gigs. The demand side users are e.g.- companies and households, who can apply for workers for gigs through the platform. According to the interviewee, the gigs include dog sitting, cleaning, and running errands. The required skill level is low, meaning that no prior competence is usually needed for the gig, but some gigs might require a little training. Gigs are mainly done on location. Many organisations, municipalities, and cities cooperate with the platform owner to help young people find gigs. According to the interviewee, there are coaches, schools, and educational institutions that support young people. She says they have specially developed support models for young people. According to her, there are currently 40 000 profiles on the platform.

4.2.1 Control mechanisms and metrics of Work Pilots

Work Pilots was found to use open access control. Even though everyone can join the platform, users must be at least 14 years old to apply for a job because of the Finnish regulations considering the minimum age to work, notes the interviewee. According to the interviewee, anyone who wants to do occasional tasks can sign in to service, anyone

can log in and seek. However, she says that jobs cannot be applied until 14 years old. That is a legal limit. The interviewee describes that the platform checks a user's age and informs them if their age is too young. Also, the demand side user can place their criteria for the tasks. According to the interviewee, they have mechanisms when, for instance, cities can choose only people from their city. That refers to that platform enables organisations, cities, and municipalities to choose members for their special group or even own platform. Also, if platform workers behave badly and do not clarify their bad behaviour, they could be blocked from the platform.

Also, the company was found to use reputation monitoring on the platform. Both demand-side users, which includes households and companies, and platform workers can review each other through the platform, notes the interviewee. Metrics used to evaluate the reputation of platform workers are a maximum of four smiley faces, where one smiley face represents a low scale in the evaluation, and four smiley faces represent a large scale in evaluation. Also, a written review is possible and recommended, the interviewee describes. According to her, every time a gig is done, both are reviewed, the one who placed the order and the one who did the job. A review can be one to four smiley faces and verbal feedback. They state that the review is available for platform workers. The reviews are visible to clients only when a worker applies for a task or customer open a task. If a review is unfair, the platform worker can take it to the platform owner, and the platform owner evaluates the situation in the reclamation process, the interviewee notes. If the review is unfair based on the evaluation of the platform owner, the platform can request the supply-side user to change the review. Platform workers can also establish own website through the platform and write about their skills, prior gigs, competencies, and reviews. According to the interviewee, platform workers have provided a possibility for a digital CV. They can get own website where they can enter videos, language skills, education, and skills. If they want to show concretely how they for instance clean, and drill, they can add videos there. That digital CV can be uploaded as a PDF or as a link. It can also show the previous gigs and their reviews. According to the interviewee, platform workers get the feedback displayed on their webpage, which make their

competence and feedback visible. Also, the interviewee emphasises that they think it is very important to define what the worker is good at, and this is something that the company would like clients to write on workers' reviews.

Quality monitoring is used little on the platform, although it is mainly the responsibility of demand side users based on the interview. The interview notes that work quality evaluation can also be integrated into the feedback. Moreover, quality is monitored through contract assignment. When the supply-side user agrees the work is performed as agreed, they sign that through the platform, notes the interviewee. According to the interviewee, the supply-side user can accept the results or say if something should be made even better.

Based on the interview, it can be stated that behaviour control is used on the platform. Behaviour is controlled through the reviews since it is easier to get work for platform workers with good reviews, encouraging users to behave well and notice the interviewee. The platform owner contacts the platform worker to clarify and discusses the situation with each party if they notice bad behaviour. According to the interviewee, they will intervene if they cannot agree on it. First, they will try to agree on their own. If the platform owner chooses, the platform worker can be blocked from the platform, even though that is seldom the case. The platform worker can access the platform if providing clearance about the situation, says the interviewee.

Based on the interview, activity monitoring was used on the Work Pilots platform. The interviewee says they have many ways to monitor the platform and its use, such as online tracking, reports, support requests and problem tracking. For instance, they can look at how many active users there are and monitor activity of job notifications. However, how much the activity is monitored did not come up in the interview. To encourage users' activity, notifications were sent if new jobs were available.

4.2.2 Coordination mechanisms and metrics of Work Pilots

Based on the interviewee, task management was a coordination mechanism at Work Pilots platform. According to the interviewee, task management is a process, which consists of the process of making an order to the finishing the products and it includes governance in every step. According to the interviewee, platform worker can put a short description and the profile picture to the profile. Also, CV information, competence, knowledge, language skills, and videos can be added to the profile.

Also, based on the interviewee, there was some incentive management for the platform workers. Although, the interviewee says that besides getting work and payment through, there are no incentives on the platform. According to the interviewee, the best incentive is to earn from the gigs. However, the help of the collaboration companies, cities, and municipals of Work Pilots can be stated to be an incentive to get employed since they help platform workers update their profiles and get employed. However, that is not an incentive to enhance the quality of work.

According to the interview, contract management is a governance mechanism on the platform. The interviewee says that the contracts are sent automatically to the workers when they are selected for the gigs. The platform uses standard contracts that the system automatically sends for the workers to be signed. As the interviewee notes, contracts can be tailored with longer-term if requested. Work is accepted by signing the work agreement electronically through the platform. As the interviewee notes, if the worker thinks they have done the gig, they sign that it has been completed, and then the client signs it if they accept it, so demand-side users sign the agreement through the platform to accept the work. If the agreement is not signed, the platform owner asks if there has been a problem, and if there has, it goes through the reclamation process. Platform workers get a fixed salary, which is 10 euros per hour. According to the interviewee, they pay ten euros per hour, which is more than TES salary. Then the dog sitters, who have got training, get a little more than that. For car transfer service, there is a fixed price in the metropolitan area if you move the car, you get 40 or 20 euros depending

how long the distance is, says the interviewee. According to the interviewee they have own platform for the city, so that platform can then be used completely for own customised use and in those own platforms they have TES salaries with various price lists. If 10 euros is too little, then the client can offer more hours which are 10 euros per, describes the interviewee. That it is minimum wage, the interviewee says.

Based on the interview, training can be stated to be a governance mechanism on the platform. Before, Work Pilots provided training both for using the platform and for certain jobs. Now Work Pilots have training only for platform usage. There are many tutorials where platform workers can train themselves to use the platform, notes the interview. There is also a support desk and support chat services on the platform. As the interviewee notes, they have very comprehensive support instructions, both videos and description of how to use the app, and a global system for support request with a chat service. Also, their website has a support button, so users can send questions and read instructions. When it comes to applying for a job, there are cooperating organisations that help in job searching, such as making the profile professional. According to the interviewee, they have many users who need support and guidance, so they have organisations, schools, municipal youth work, and various organisations that help, for instance, to make a profile together. The platform also had mobile training for specific jobs, such as for car transfer services. Tests are used to measure the training success, as interviewee notes there is questions to complete the course. Cooperating organisations can also provide training, fairs, and support functions for the platform workers, according to the interviewee.

Besides training, their platform supported their platform workers very much. As the interviewee notes she has been sitting for about tens of hours to help their platform workers and make them understand how employers operate. She says that she tries to direct them to their collaborative youth organisations if there is a need. The broad cooperative net of organisations is an important part of the platform, as the interviewee notes, a wide involvement of the cooperation network enables such a wide threshold of help.

Moreover, the interviewee states that if there is a need for a support, there would be some bigger thinking about how to help.

4.3 Company 3 Bolt.Works

Bolt.Works were founded in 2006. The firm operates nationally in Finland. According to the interview, it is a hybrid operator in the field of recruiting services since it has both traditional recruiting services and a digital platform for job searching. The company sifted towards platform thinking and platform technology development in 2016. As interviewee 1 notes, they are perhaps more of a hybrid organisation because they have a very traditional rental business too, and the technology gives it a competitive advantage. Also, interviewee 2 notes that they are a technology-focused personnel service company, because the job seekers register in the system, and their recruiters go through them. According to interviewee 1, the platform works in such a way that the clients place an order, employees apply for it, and the client accepts it. Thus, the study and findings concentrate on the platform side of this firm's business. According to interviewee 1, Bolt.Works has grown in recent years, and turnover was almost eighty million euros recently.

Bolt.Works offers employment to their platform workers. As interviewee 2 notes, anyone can apply as a job seeker. However, they create an employment relationship. This is what makes Bolt.Works platform different from most digital platforms. Bolt.Works sign an employment contract with their workers. As interviewee 1 notes, most are employed and, in a sense, it is a traditional staffing company. They still have their traditional business side and use recruiters to select customer workers. Currently, only a small portion of jobs goes directly through the digital platform, and the gigs are one of those jobs, says interviewee 1. Interviewee 2 notes that the task appears in their system as a gig to be applied for, and an employee can grab it from there and apply directly to it, and the customer can directly accept it. According to interviewee 1, platform workers work in construction, logistics, property maintenance, hotel, restaurant, and catering industries.

Interviewee 1 notes that work usually requires a low to medium skill level and is on-location-based. Interviewee 1 says that most of the company's orders come from traditional ways, but a portion comes from the open platform.

According to interviewee 1, the company also uses an internal platform for selected workers to apply for jobs. Their internal platform is for work management between Bolt.Works, workers, and customer companies, as interviewee 1 notes, they developed an internal system, which is also like a platform itself, where is, for instance, payroll and the billing program built. So, a payroll and billing program is developed in the internal platform. The platform brings a competitive edge in the market field for Bolt.Works.

4.3.1 Control mechanisms and metrics of Bolt.Works

Both interviews confirm that access control is used on the Bolt.Works digital platform. Everyone can apply to join the open platform and seek workers or a job through it. However, job applicants must provide enough information about themselves through their profile for their profile to be published on the platform. As interviewee 1 notes, regarding on how well the profile is filled up job applicant will go further in their recruitment process, so the profile must be well enough filled to be published, and in practice, recruiters will manage those people's profiles. Interviewee 1 notes that recruiters and the system check if there is enough information for the profile to be published. The system creates profiles for each job applicant to the internal platform, whether they have applied through the traditional way or the platform because work governance is happening through that. Interviewee 2 notes that recruiters must agree on the general terms of employment before workers can accept gigs on the platform. This means they have had a background check, checked that the professional information is correct, had an interview, told what it means to work at Bolt, and what safe working means. Also, the terms of the employment relationship are agreed upon, such as wages, working hours, and rules. Interviewee 2 notes that a gig-worker will get gig offers and accept ones that interests them. According to interviewee 1, algorithms rank applicants and send the most

suited applicants notifications about gigs that could suit them. Interviewee 1 notes that algorithms based on machine learning seek what has been written in the profiles, such as profession, previous work experience, and skills. However, recruiters or customer companies select the most suitable applicant.

Through both interviews, it is possible to interpret that reputation monitoring is used on the Bolt.Works platform. According to interviewee 1, workers and customer companies can give reviews of each other. Interviewee 1 states that both employees and customers are regularly asked feedback of each other so they can then react according to it. Interviewee 1 notes that reviews can be star ratings on a scale from 1 to 5, in which 1 is for a low and 5 is for a high rating. Star rating is also in the logo of Bolt.Works to represent the reputation monitoring system that the company has for the users of its platform. Also, according to interviewee 1, giving written reviews and using tags such as fast and precise to help monitor the workers' reputation is possible. According to interviewee 1, they have a star review, then some tags can be saved, such as fast and accurate, and verbal reviews can also be given. These can be checked from the job applicant’s profile.

According to interviewee 2, verbal feedback is probably the primary thing, and the star rating is something they automatically ask for. Interviewee 2 notes that the law requires them to be in contact with their customers in certain situations. Interviewee 2 states that verbal feedback over the phone still has a very important role when dealing with customers. Employees can also give feedback about our customers, for instance, about the orientation that customers do. With these feedbacks, they can get on top of these situations and talk better with the employees. That shows how interviewee 2 notes the importance of discussion and multiple aspects rather than numeral scales. Interview 2 says that the fact that an employee tells how satisfied they were with the client is not just talking directly about what is asked but also about how successful that staffing has been. Also, it may talk about the employee's feelings or nausea. Moreover, as interviewee 1 notes, algorithms rank who could be the best fit and to whom we sent the notification about the new job first. However, a human makes the decision.

Regarding quality control, interviewee 2 notes that occupational safety induction, or asking after the first day how the induction went, is important for the quality and safety of workers. Interviewee 2 notes there is a verbal scale for the induction, and if the employee answers that they were not induced, Bolt.Works make calls and ask about how the induction went so that they can ensure quality and safety. According to interviewee 2, it has five different verbal options, so it is not numeral. Options consider how well the induction went, in the employee's opinion. When asked about quality measurements, interviewee 2 notes that quality is not objectively measurable, it is subjective assessments, which can be affected by someone's feeling of that day. If an employee does his job very well and, for instance, their behaviour is somehow bad, it can impact the evaluation of the work. Good manners are part of the job. According to interviewee 2, many factors might impact the review, whether a plank has been painted with the best possible quality and fast enough, how the instructions were received, whether that person asked for additional information and checked things, and whether his actions seemed high-quality. She says that a review is not objective. It is always connected to the situation and the mutual functionality of those persons.

Behaviour control can be used on the platform based on the interviews. According to interviewee 2, it is a very basic obligation. They say that the employee gets orientation about how they should behave from the Bolt.Works, and if they behave badly, they must intervene. According to interviewee 2, customers might contact directly through the phone to Bolt.Works about the behaviour of their employee and if so, they call the employee or ask them to come to the office and tell them how to change their behaviour, in more severe cases, more severe arsenals will be used, such as written warning. Also, reviews can impact the worker's behaviour if a worker receives a one- or two-star rating, Bolt.Works requires clearance about the problem and discussing it with the worker and customer company. This has enabled them to get better results from the worker. As interviewee 1 notes, if there is a one- or two-star review, they will practically manage what has gone wrong with the employee and the customer, and they have managed to

improve the results. According to interviewee 1, the system encourages customer companies and employees to give reviews of each other by sending notifications. According to interviewee 1, recruiters can receive feedback, and that feedback is written on the worker's profile. Interviewee 1 notes that if workers misbehave, they could be blocked from the platform, but that is seldom. In addition, positive feedback is important. According to interviewee 2, it is the key from the perspective of managing ability. It makes people usually cope better at work. For instance, the 5-start model means they can get compliments when they have succeeded in that job, and it shows up on their payslip.

Activity monitoring is used on the platform slightly. Only a little action, however, is taken to impact the behaviour of platform workers. It is more related to general application development. Suppose the profile needs to provide more information. In that case, the system will send a recommendation to update the profile, and the recruiter can call to inform about that directly to the job seeker. As the interviewee notes, if there is not enough information, then the system can ask to complement them and will communicate that the applicant will be better employed if they fill in the information. So, the recruiter can also call to encourage job applicants to provide more information even though the profile would be published, to inform them that they could be employed better if they have more information in their profile. Also, if a user has not logged in within two years, the system will send an automatic message to inform that the user must log in or the account is deleted. Also, activity related to filling in the fields is used. According to interviewee 1, regarding what fields employees fill, if they need to be used more often, some measures can be taken to make better use of them. For instance, fields can be modified, and the field placements on the website can be shifted.

4.3.2 Coordination mechanisms and metrics of Bolt.Works

Task management is used on the platform. Interviewee 1 states they have many things related to the actual employment relationship governance and management built on the platform side. For instance, notifications are sent to platform workers about

entering the weekly working hours into the system. The platform also has a comprehensive system for work management. According to interviewee 1, everyone uses it at the latest when they have employees. It is used to manage work orders. He says that customers accept hourly cards every other week, and it is a comprehensive system to manage employment. According to interviewee 1, their internal platform also manages payrolls, contracts, and billing. They say vacations, absences, and equipment are reported through the system. Also, application benefits are informed there.

Incentive management is used on the platform. If a worker receives a five-star rating, they get a 2% bonus to their salary, which works as an incentive to behave well and improve the quality of work. Also, star ratings can impact how easy it is to get a gig from the platform, so they work as incentives to behave well and perform well. Interviewee 2 notes, when asked about incentives, that there is a five-star bonus when the worker performs their job well overall, and that overall performance gets the customer to click on the five stars, so then we pay a bonus directly, a certain percentage of the salary, so you get more salary.

Contract management is used on their platform. Bolt.Works is an employee of the platform workers. Interviewee 1 notes that they have taken the line of employment regarding the contracts. According to interviewee 1, the contract system is well developed and one of their most significant advantages. They note that they have a system for modelling collective agreements and signing and handling employment contracts. Although, as interviewee 2 notes, that agreement is still traditionally made face-to-face even though it is signed digitally through the system. It ensures that workers get the proper contracts. Thus, the company defends the employee's rights. Also, an automatic payroll and billing system automatically pays wages and handles invoices correctly. According to interviewee 2, they must measure working hours to pay the salary correctly. Contracts are kept relatively standard, although some customisable fields comply with Finnish TES agreements. Contracts are trying to stay standard to make automation easy and comply with TES. Bolt.Works decide the salary. Usually, the wages are quite standard, a certain

amount of euros per hour. Salary can be negotiated if the gig is more demanding than usual. Contracts are signed digitally through the platform. According to interviewee 2, there might be non-disclosure agreements and these types of agreements.

Based on the interviews, the platform uses training as a governance mechanism. According to interviewee 1, some training is provided related to work, such as fire card and safety card training. In addition, interviewee 2 noticed they are currently working on a more digital approach to the orientation; at the moment, it is very much done by humans; they have a video guide as well. According to them, they have for certain industries, for certain situations, for certain needs, different kinds of special training, and aim to organise these types of specific training with a few days of training or one day of specific training. Also, employees can be trained to go further on their career path, as they notice. According to interviewee 2, training is arranged both online and, on the spot, requiring either a test or approval of the instruction. Also, training related to platform usage is performed, however as interviewee 2 notes, the goal is that the system should basically be so easy that if a person is at all digitally savvy, they can manage without guidance. She says that when they employ a person, they go through certain things with them, such as how the work hours are recorded, where the gigs can be found, and salary tapes. Job applicants are informed about the platform if they apply for jobs through the traditional way so that they can use the platform for applying for jobs. They can apply for multiple jobs with the same application through the profile, so it facilitates the process.

4.4 Synthesising the mechanisms and metrics

This section illustrates the mechanism and metrics found in the empirical findings. The findings show that governance mechanisms and metrics to govern platform workers are used in each case company. All case companies used access control, activity monitoring, task management, incentive management, contract management, and training. Reputation monitoring, quality control, and behavioural control were used in only two case

companies. Table 2 illustrates the key findings of each case firm's governance mechanisms and metrics.

Some similarities and differences were found in crowdwork governance mechanisms with general digital labour platform governance mechanisms, in which tasks are given to selected individuals. Similar mechanisms include incentive management, contract management, and reputation monitoring. Although task management and quality control were also identified as governance mechanisms, their use differentiated from crowd work governance. For instance, in digital platforms task management differed from crowdwork related task management because the tasks were not allocated to crowds but to individuals.

The study framework also contained general digital platform governance mechanisms, such as access control and behavioural control. The empirical findings showed that access control was a common mechanism to use since all case firms used it. There were some standards to join the platform, which varied between companies. The empirical findings show various screening mechanisms, such as the valid VID number to verify the company, certain age to access the platform, and a certain amount of information to qualify for platform workers' access.

Regarding reputation monitoring, the platform owner's use of the mechanism varied. Case company 1 did not use it, whereas case companies 2 and 3 did use it. The companies which used reputation monitoring monitored the reputation of platform workers through scale reviews and oral and written feedback. Reviews shown in the user's profile are monitored by the platform owner, who can ask to change the review if needed. Reputation monitoring aims to motivate workers' competence and compliance with procedures. Platform workers with high ratings could receive notifications of newly posted jobs before others and have access to the desired assignments. This is shown in case company 3, where algorithms select to whom job notifications are sent first.

When applied to the digital labour platform scheme, quality control seems somewhat of a responsibility for the demand side, also known as customers. The control that which platform owner takes on quality is based on reviews and work signing metrics evaluation in case firm 2 and occupational safety induction evaluation in case firm 3. In contrast, case firm 1 is not responsible for quality control. However, based on the results, the case digital platforms in this study take a different role in quality control than traditional firms. Rather than monitoring the quality, it is the responsibility of the customers to do the monitoring and accept the quality. They simply check the reviews and act if there is a need based on those. Case company 3, which is closer to a traditional company, involves induction to ensure better quality but is not either controlling the results.

Behavioural control was not used in every case platform, but when it was used, the discussion with the platform worker was important to evaluate behaviour and influence the worker's behaviour. Case company 2 and case company 3 based their control on feedback received from the customers. In addition, case company 3 used orientation to give and gather information about behaviour, which is telling what kind of information. Bad behaviour could lead to being blocked from the platform until the clearance is made from the worker's side. Also, feedbacks affect workers' behaviour with the effect of a high rating enabling them to get gigs easier, whereas a low rating leads to the clearance process. Also, some actions might be taken based on written and oral reviews, such as talking with the employee or a written warning.

However, reputation monitoring, quality control and behavioural control were sensitive subjects to measure according to the case firms. The interpretations of them can be subjective. Moreover, there can be many reasons behind the behaviour, which is why talking with the workers can be very important.

Task Management was not much used in the case companies. Tasks were mostly managed with notifications to platform workers. The case companies were not found to use

activities such as subtask management and subtask distribution between workers. Tasks were managed mainly through the platform interface with notifications.

The incentive management that the case companies used were different from each other. However, the key in them all was to give rewards and incentives to behave and perform desired way. Gamification, collaboration organisation help, and financial incentives all are to encourage certain behaviour and performance.

Contract management was used in all case companies. Typically to digital platforms, case company 1 and case company 2 used agreements between customer companies and platform workers, in which platform workers are not their employees. Whereas case company 3 did have platform workers as their employees because they have a hybrid business. Contracts in all case firms were quite standard, but it was possible to tailor them as well. Contract Management was used in the case companies to coordinate agreements formation consisting of work terms between worker and job provider. Contract management was used especially in case company 3, which selects its employees. Moreover, case firms 2 and 3 were shown to set fees for routine work.

The most interesting result was that a completely new mechanism was found in the empirical study that was not found in the literature review. This study uses the term activity monitoring to describe this found mechanism. Activity monitoring, in this case, involves monitoring, tracking, and encouraging users to make ways for them to be active on the platform. In this case, the behaviour of users is, in a way, evaluated based on their activity level. There can also be rewards such as completing the scale of a percentage of the profile or getting access to apply for jobs when the user is active on the platform.

Also, an interesting finding was that training was used in all case companies as a governance mechanism. The study framework also contained training as a mechanism. The hypothesis of training as a governance mechanism found support from the empirical findings. Moreover, it was related to both platform usage training and work-related training.

The training was used more in case companies 2 and 3, which used training for both platform usage and work. Case company 1 used only a little training, which considered only platform usage, not the work itself. Also, interestingly training was used in case company 2 more comprehensively. They used to support functions for their platform workers to train them to be better at job seeking.

Table 2. Case companies' governance mechanisms and metrics.

Company information: Company name, year of establishment, core business, countries it operates in, employees	**Platform workers:** platform workers; work provided in the platform, number of platform workers; required skill level; online or on-location	**Mechanisms**	**Metrics**
Company 1 Ework Group; 2000; business to business agency platform for consulting firms and firms that need consulting services; Sweden, Denmark, Norway, Finland, and Poland; 300 employees	Companies providing consulting services and consultants as platform workers; consulting work; 12 000 consultants on the platform, high skill level; online and on-location	**Access control:** A valid VID number for a registered business must be provided to join the platform. **Reputation monitoring:** There is no monitoring of reputation by the platform. However, the demand side companies can evaluate the consultants themselves. **Quality control**: There is no control of quality by the platform. However, the demand side companies can evaluate the consultants themselves. **Behavioural control:** There is no controlling of behaviour by the platform. However, the demand side companies can evaluate the consultants themselves. **Activity monitoring:** A new mechanism was found that refers to monitoring and encouraging the activity of platform workers. The platform tracks	**Access control:** VID number is used as a measure of the firm's validity. **Activity monitoring**: The platform monitors what users click on, are they logged in, how often they log in, what parts of the system are used frequently, and how many jobs they look at. Also, they encourage users to update their profile with a scale of percentage of profile completion rate. **Task management:** The platform tracks users and notifies users to report the number of consultants in the firm, average working hours, contracts, and labour costs. **Incentive management:** The platform uses scale of percentage of profile completion rate, and technology that informs if some information is still needed for the profile to be completed.

Company information: Company name, year of establishment, core business, countries it operates in, employees	**Platform workers:** platform workers; work provided in the platform, number of platform workers; required skill level; online or on-location	**Mechanisms**	**Metrics**
		users' behaviour and clicks on their platform. **Task management**: The platform provides tasks to remind users for such as to sign contracts, and report time of work. **Incentive management:** The platform uses gamification such as thumbs up -pop up visualizations as incentives to update information and being active on the platform. **Contract management:** The platform uses B2B agreements between consulting firms and demand side firms, and they enable technology for clients to tailor and sign contracts. Also, there are GDPR legislation for personal data that must be considered. **Training:** Customer success team helps with using the platform, trains trainers for companies, also companies themselves train their employees.	**Contract management:** The platform must monitor time, since there is legislation considering the employment relationship. **Training:** The platform measures the amount of support cases as indicator for training success.
Company 2 Work Pilots; 2015; provides a platform for young to get gigs and for companies and households to search workers; Finland, Sweden; employees	Usually young; many small work gigs such as dog sitting, cleaning, and running errands; 40 000 profiles on the platform; low skill level; on-location	**Access control:** Everyone can join to the open platform but must be at least 14-year-old to apply for a job. Also, the platform provides closed platforms for cities or organizations. **Reputation monitoring:** Both demand side users and the platform workers can give a review of each other through the platform. The workers can	**Access control:** AI checks for age of the worker, and if it is too young it informs that work cannot be applied yet. **Reputation monitoring**: Demand side users can give max 4 smiley faces and written review for the platform worker. **Quality control**: Platform checks reviews and written feedback. Customers can

Company information: Company name, year of establishment, core business, countries it operates in, employees	**Platform workers:** platform workers; work provided in the platform, number of platform workers; required skill level; online or on-location	**Mechanisms**	**Metrics**
		establish own websites trough the platform about their earlier gigs, skills, competences, and reviews. If an unfair review is given platform owner can ask to change the review. Reviews are shown in the user profile. **Quality control**: Customer can monitor the quality of the tasks themselves, write reviews of the work quality, and accept the work through signing. The platform checks the reviews and is in contact with the parties if needed. **Behavioural control:** Behaviour can be controlled with received feedback. The platform owner can contact directly to platform worker and discuss if there are any problems, if there is reclamation platform owner discusses with each party and evaluates the behaviour. A bad behaviour can lead to be blocked form the platform until there is clearance made from the worker's side. **Activity monitoring**: The platform sends notifications for jobs available to keep users active. **Task management**: The platform has tasks for profile updating. **Incentive management:** The platform incentive is to get work and payment trough the	accept the quality of work through contract signing. **Behavioural control:** Platform checks the reviews. **Contract management**: each party must sign and accept the contract in the platform when the work is accomplished, if it is not signed it goes to reclamation process. **Activity monitoring:** The platform can check how many users are active, and activity of job notifications. **Task management:** The platform has no metrics for task management. **Incentive management:** The platform has no metrics for incentive management. **Contract management:** Work is accepted through signing the contract in the platform. **Training:** The platform has tests for evaluate the training.

Company information: Company name, year of establishment, core business, countries it operates in, employees	**Platform workers:** platform workers; work provided in the platform, number of platform workers; required skill level; online or on-location	**Mechanisms**	**Metrics**
		help of their collaboration organizations. **Contract management**: The platform has a fixed hour salary of 10 euros per hour. They have standard contracts automatically send to workers. Also, longer contracts can be tailored, and work accepted through signing. There is a reclamation processes if there is a problem. **Training**: The platform has tutorials about how to use the platform, support desk, and support chat. They also have partner organizations providing support such as helping to make professional profile. The platform also organizes trainings, mobile trainings, and support functions for workers.	
Company 3 Bolt.Works; 2006; Finland; technology emphasizing employer in recruiting services; Finland; 150 workers	Platform workers work in construction, logistics, property maintenance, hotel, restaurant, and catering industries; platform provides gigs; 2500-3000 workers in employment	**Access control:** Everyone can join the open platform, but to get work everyone must register to the system, then apply job position and be accepted to employment through interviews, which are conducted by Bolt.Works. Enough information must be provided by the applicant to their profile to be published. Only selected workers get a profile for internal platform. Also, algorithms can rank suitable candidates and send notifications for	**Access control:** The platform measures the profile's information amount and the employment status. Algorithms search for tags, profession, skills, and competences on the worker profiles. **Reputation monitoring:** The platform uses star ratings in scale of 1-5, and oral and written reviews. **Quality control:** The platform has a verbal scale for the induction. The scale has a five verbal options for each question of the inquiry. That scale can be

Company information: Company name, year of establishment, core business, countries it operates in, employees	**Platform workers:** platform workers; work provided in the platform, number of platform workers; required skill level; online or on-location	**Mechanisms**	**Metrics**
		them about available positions. **Reputation monitoring**: Customer companies can review workers and workers can review companies. Also, recruiters can write reviews and receive feedback trough phone calls about their workers. Reviews are shown in user profiles. **Quality control**: The platform asks from its workers about their occupational safety induction that the customer company has kept. How the worker has been induced to their work is important for the work quality and safety. If the worker is not induced correctly the recruiter will call them. **Behavioural control**: The platform gives orientation about the wanted behaviour to their employees. A high star rating enables to get gigs easier, whereas low star rating leads to clearance process between worker, customer firm and Bolt.Works. Also, based on written and oral reviews some actions might be taken, which might be talking with the employee or written warning. **Activity monitoring:** System and recruiters can send notification for the users to update profile fields, or to log in the system. If worker has not logged in 2 years, the account	shown as an indicator of work quality as well. Also, verbal feedback is asked. **Behavioural control:** The platform uses star ratings 1-5, where 1-2 ratings lead to clearance process. Also, written, and oral reviews are checked. **Activity monitoring**: System and recruiters check the profile fields information and usage, and the system checks if account has been logged in 2 years. **Task management:** The platform checks if user have enrolled weekly hours. **Incentive management:** The platform uses star ratings in scale of 1-5, and when worker receives 5-star rating they will get a bonus for their salary. **Contract management:** The platform measures the work hours of the employee. **Training:** The work-related training in evaluated either with a test or with acceptance of the trainer.

Company information: Company name, year of establishment, core business, countries it operates in, employees	**Platform workers:** platform workers; work provided in the platform, number of platform workers; required skill level; online or on-location	**Mechanisms**	**Metrics**
		is deleted. Activity of how much certain fields are used is tracked. **Task management:** The platform sends notifications to users to enter weekly working hours. Also, workers vacations, and equipment are shown there, and payrolls, contracts and billing are managed through the internal platform. **Incentive management**: When worker gets a 5-star rating, they receive a bonus for their salary. A high rating usually means that it is easier to get work from the platform. **Contract management:** The platform has system for modelling collective contracts, TES, signing and handling contracts digitally. Contracts are quite standard. Workers are employees. There are also some cases where non-disclosure agreements are made. **Training:** There is work related training and platform usage related training in the platform, mostly done by humans. Both online and on the spot training.	

The case companies represent different involvement levels considering their governance of platform workers. The autonomy of the platform worker varies between case firms, as shown in Figure 8. Also, the kind of business companies impacts the autonomy

and skill level of the platform workers. For instance, case company 1 (Ework Group) operates more as a technology provider, so the autonomy of the workers is high, and they govern their platform workers less. In contrast, case company 3 (Bolt.Works) works more as a recruiter, which demands high control levels with its workers, so the autonomy of the workers is low. However, case company 2 (Work Pilots) platform workers' autonomy level is between the autonomy level of case companies 1 and 3.

Platform workers autonomy is shown in many ways. In case company 1 and case company 2 platform workers can compete and choose which tasks they want to apply for, which implicates high autonomy. In contrast, in case company 3, algorithms send best suited applicants' information about the jobs first, and recruiters choose the workers, though workers can decide to apply. Also, pay rates are decided for the platform workers in case company 2 and case company 3, whereas in case company 1, pay rates were not defined by the platform. In addition, contracts were tailored in case company 1 and mostly standard in case companies 2 and 3. Moreover, most penalties and incentives were used in case company 3, whereas in case company 1 and 2 there were only a few of those.

As the findings show, case company 1 uses fewer different governance mechanisms than case company 2 and case company 3, which means that the level of governance is generally higher and more comprehensive in case firm 2 and case firm 3 than in case firm 1. For instance, case company 1 claims not to use mechanisms that include reputation monitoring, behaviour monitoring, and quality monitoring. In contrast, they are important mechanisms for case companies 2 and 3. However, case company 1 uses more activity monitoring than other companies. Mechanisms that include controlling platform workers, including reputation monitoring, behaviour monitoring, and quality monitoring, were not found in case company 1. In contrast, they were important mechanisms for case companies 2 and 3. This also shows platform workers' different levels of autonomy between the companies. Moreover, Company 3 was the only company that made employment relationships with its platform workers, showing the workers' low

autonomy. These shows that platform workers are more autonomous and not as controlled in case company 1 than in case company 3.

Also, the skill level of the platform workers varies between the case companies, as shown in Figure 8. The training was found to consider both training related to platform use and training related to work. Case company 1 have got high skill-level platform workers, and they use training related only to platform usage, not to work itself. This shows low coordination with platform workers. In contrast, case firm 3 uses much work-related training and some platform usage training. Thus, it shows that platform workers are more autonomous in case company 1.

Figure 7 can be used as a tool for situating the platform workers in the firm according to their skill level and level of autonomy. However, it should be noted that the dimensions are continuous, and various factors might affect them. It shows how skill level and autonomy impact used governance mechanisms.

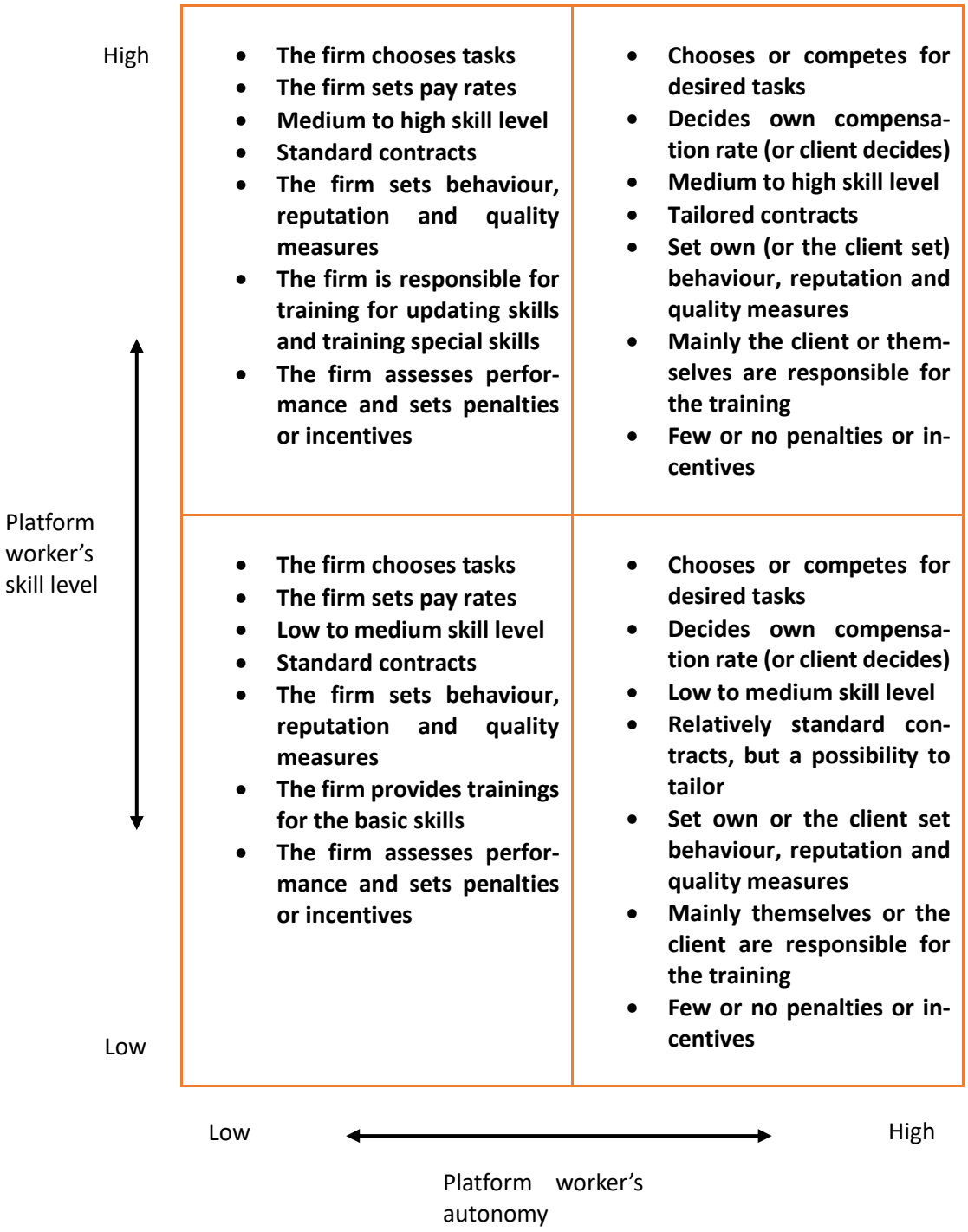

Figure 7. Classifying platform workers' skill level and autonomy in the firm.

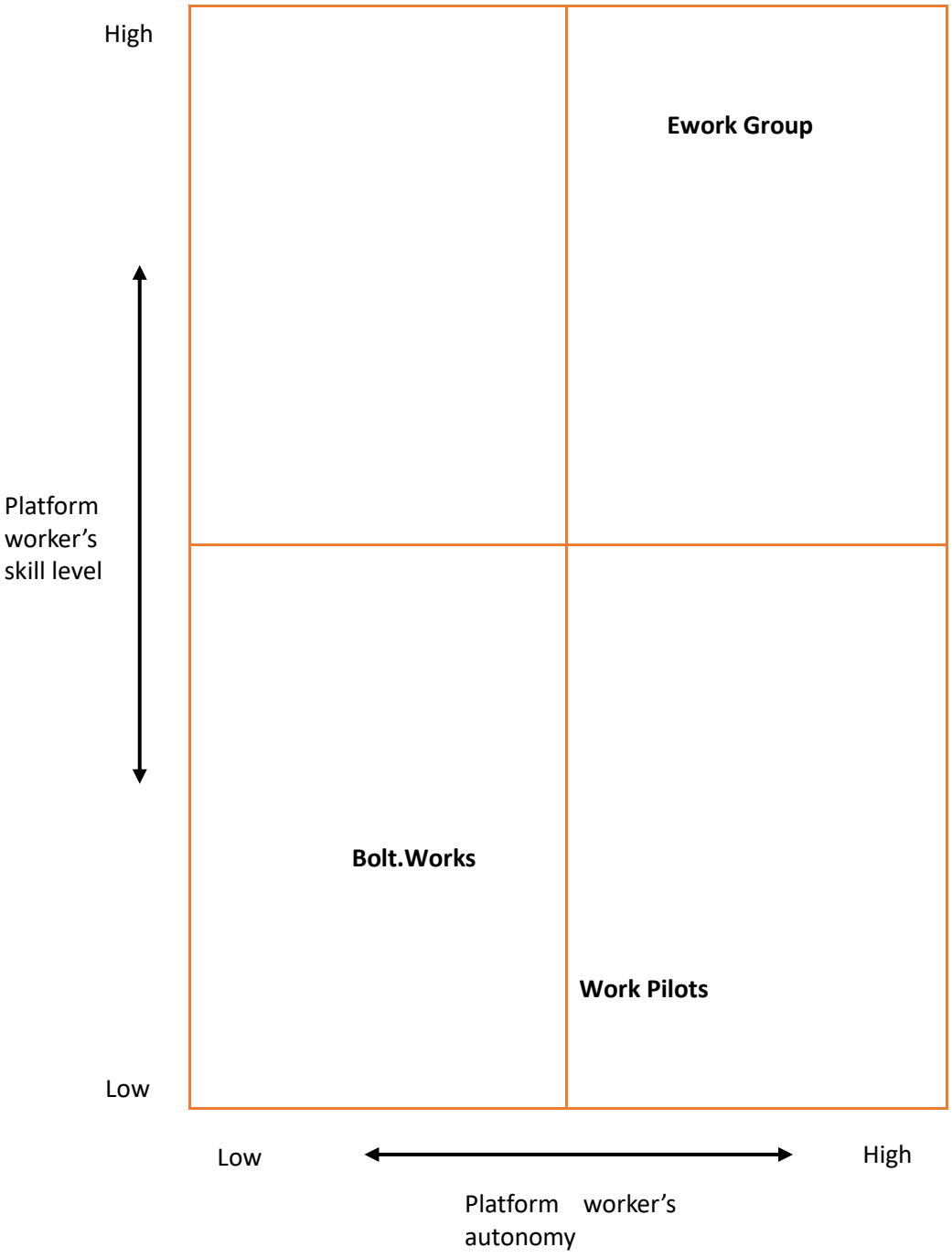

Figure 8. Situating case firms based on platform worker's autonomy and skill level.

This research produced interesting empirical findings, one of which was the governance metrics. Those metrics were only little known in the literature. However, the metrics vary between the platforms, so these findings are the only instances of what kind of

metrics there can be in platforms. The findings are illustrated in Figure 9, which shows the key governance mechanism and metrics found.

Also, when considering access control, metrics included ways to check and ensure that the customer is what the platform requires, such as a valid VID number, user's age, and the amount of information in the profile. So, it seems very much platform-specific what metrics are used in access control. The case firms have in common that to have access, there are some requirements to fill in the information.

When considering the reputation monitoring metrics, findings show that it is company specific what metrics are used. Such metrics as ratings with scales, written reviews, and oral reviews were used in the platforms. Multiple metrics to monitor reputation can be used at the same time, as, for instance, case company 3 did use. That can give a more comprehensive view of the subject.

Regarding quality control, findings show that platforms use metrics such as reviews with scale, written feedback, verbal scale, verbal feedback, and contract signing. Some of these metrics overlap with reputation monitoring metrics because the information is gained similarly with quality. These quality metrics were quite similar between case platforms. However, quality can be impacted by many factors, so it might be hard to measure depending on the kind of product or service.

Regarding behavioural control, similar metrics to quality control were used in platforms, including ratings with scale and written and verbal feedback. Certain ratings lead to a clearance process, whereas high ratings lead to incentives. An important is talking with the worker to understand the reasons behind the behaviour and talking with the customers to measure those behaviours. However, behaviour interpretations can sometimes be quite subjective and thus hard to measure.

When considering the activity monitoring metrics, this research found metrics such as what users click on, when they have logged in, how often they log in, how many users are logged in, what they look at, the activity of job notifications, field usage, what parts of the system is used frequently, how many jobs they look at, employment status, and profile completion rate. These metrics are also very platform-specific, although some similarities, such as user logging, were found to be used in each case company.

Viewing the task management metrics, platforms used task management metrics to measure the users' reports of information regarding the work. Metrics for task management were to track users and notify them to report the number of workers, average working hours, contracts, and labour costs. Subtask management was not used like in crowdwork governance because the tasks are already directed to a certain person, or the client is responsible for defining the tasks more precisely.

Regarding incentive management metrics, platforms used a scale of a percentage of profile completion rate and scaled ratings. These measures help to track platform worker performance and know when to reward them. For instance, case company 3 gives a monetary incentive when the platform worker receives a 5-star rating.

Regarding contract management metrics, the platforms monitor the time of the work period, GDPR legislations, work hours, and contract signing. Contracts can be standard or tailored. Contract signing can be used for clients to accept the work of the platform worker.

The findings show that training metrics used on the platforms include the number of support cases, training evaluation tests, and trainer acceptance. A good performance on these metrics shows success in training. For instance, good test results can tell that the training is working and about the worker's skill level.

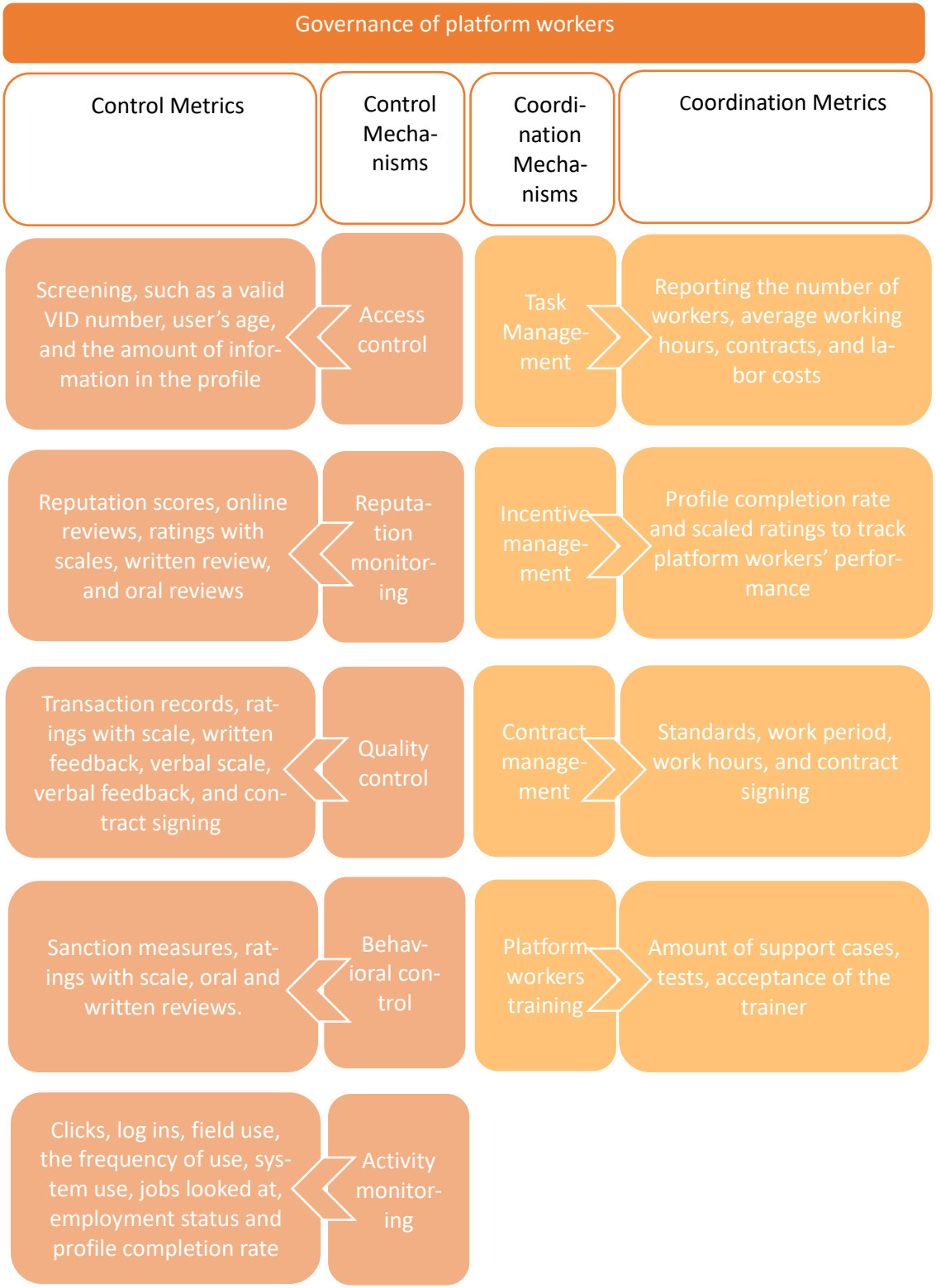

Figure 9. The framework of platform workers' governance mechanisms and metrics.

5 Discussion

The discussion chapter discusses theoretical implications, managerial implications, and suggestions for future research. First, theoretical and managerial implications are represented, summarising key findings and drawing interpretations from the empirical results. Then future research suggestions and limitations of the study are discussed.

5.1 Theoretical implications

The contribution of this study is fivefold. First, the aim was to study governance mechanisms and governance metrics that digital labour platform owners use for platform workers in digital labour platforms, which according to the literature, required a more detailed study. Many researchers suggested researching this subject in earlier research (van Alstyne & Schrage, 2016; Cennamo & Santaló, 2019; Chen et al., 2022; Kuhn and Maleki, 2017; Tiwana, 2015;).

Because the framework in the literature review was mainly for crowdwork platforms (Gol et al., 2019), a new theoretical framework had to be formed. The literature research and empirical findings together made it possible to construct a new framework for governance mechanisms and metrics of digital platforms for platform worker governance. Because digital platforms' have multiple components and actors that interact to shape the platform (Eaton et al., 2015; de Reuver et al., 2018), their governance mechanisms need to be different from traditional firms. The research framework constructs the control and coordination mechanisms. Based on the literature and empirical findings, this study suggests that digital labour platform governance consists of control mechanisms and coordination mechanisms. Control mechanisms include access control, reputation monitoring, quality control, behavioural control and activity monitoring. Coordination mechanisms include task management, incentive management, contract management and platform worker training.

Second, it was found that quality control and task management mechanisms were not applied to the digital labour platform scheme, as they were presented in the literature review. Quality control was argued to be used for evaluating the degree to which the work meets work requirements and specifications (Agrawal et al., 2015) and to be performed with controller monitoring workers' compliance with organisation standards in centralised governance (King, 1983, p.20). In contrast to that, quality control seems to be somewhat more of the responsibility for the demand side, also known as customers. Quality control is performed more like in decentralised governance, with consensus evaluation of workers' compliance to collectively agreed standards with incentives required to keep to the commitments (King, 1983). However, based on the results, it can be argued that the case firms take a different role in quality control than traditional firms. Rather than monitoring the quality themselves, it is somewhat the responsibility of the customers to monitor and accept the quality. Case firms 2 and 3 check the reviews and act if there is a need based on those. However, customers are primarily responsible to informing about the quality they have received. Moreover, quality was a sensitive subject to measure according to the case firms, and many reasons could impact it, making it difficult to measure.

Moreover, task management, which refers to the ability to coordinate interdependencies between tasks with diverse characteristics, such as task diversity, task clarity, and job autonomy (Crowston, 1997; Gol et al., 2019), was not used as in traditional firms or crowdwork platforms in the case companies. The case companies were not found to use activities such as subtask management and subtask distribution between workers as in crowdwork governance of Gol et al. (2019). In contrast, tasks were managed mainly through the platform interface with notifications to platform workers. Hence, this study challenges the view of Gol et al. (2019), suggesting that digital labour platforms use task management differently from crowdwork. There might be more need for task management for crowdwork than for other forms of digital labour platforms. In the case firms, tasks are allocated to individuals rather than crowds, and one person usually does the whole service, which could clarify the tasks to the workers.

Third, one significant finding revealed in this study was finding two new mechanisms: workers' training and activity monitoring. The training was interpreted as a mechanism because the platform worker quality was mentioned to be important in earlier research (Kääriäinen, 2021; Van Alstyne & Schrage, 2016; Taeuscher & Rothe, 2021) but had not yet been identified as a governance mechanism. The prior discussion about the subject was ensuring the quality of platform workers (Kääriäinen, 2021), empowering them (Van Alstyne & Schrage, 2016), and providing high-status platform workers (Taeuscher & Rothe, 2021). Thus, this study develops the views of Kääriäinen (2021), Van Alstyne and Schrage (2016) and Taeuscher and Rothe (2021) by adding the training of platform workers as a mechanism to the study's empirical framework to test if it would be found to be an actual mechanism. The hypothesis was found to be right. In every case company, training was used as a mechanism. However, a new finding was that training could be used the way it was used in case company 2, which used support functions comprehensively to train users in job seeking.

In contrast, activity monitoring was found only based on empirical findings. Activity monitoring was discovered as a new mechanism in the empirical findings and was used in all case companies in this study. It refers to monitoring and encouraging the activity of platform workers in the digital platform. Platforms were found to track users' activity, behaviour, and clicks on their platform. Case companies also were found to send notifications to encourage user activity. Active users were found to be valuable to the platform since they bring value to customers. This study uses the term activity monitoring to describe this found mechanism. Activity monitoring can be viewed as a control mechanism. It can be argued not to be a coordination mechanism since, according to Crowston (1997), coordination mechanisms are selected as suitable for the process and refers to managing tasks and resources and facilitating the work together (Malone & Crowston, 1990, p.5). Activity monitoring, in this case, involves monitoring, tracking, and encouraging users to make ways for them to be active on the platform. This study argues it to be a control mechanism because performance or outcome evaluation and reward are

usually involved in control mechanisms, as Eisenhardt (1985) notes. In this case, the behaviour of users is, in a way, evaluated based on their activity level. There can also be rewards such as completing the scale of a percentage of the profile or getting access to apply for jobs when the user is active on the platform. However, as Gol et al. (2019) note, control and coordination are often intertwined, so it might be that this mechanism overlaps some qualities of control and coordination mechanisms.

Fourth, this study was able to answer the need for knowledge of governance metrics and reveal how firms measure their platform workers' performance and behaviour. This study reveals valuable insight into the algorithms, feedback and other metrics not empirically researched earlier (Kuhn and Maleki, 2017). Van Alstyne and Schrage (2016) stated the need to study creating measurably better users. Also, Chen et al. (2022) suggested the study of platform owners' governance metrics, especially the performance evaluation of platform workers. Moreover, data is a fundamental asset to both the platform and users (Gregory et al., 2021). Thus, this study brings value to understanding the data of the governance metrics used in monitoring platform workers. Earlier research found only a few governance metrics, including online feedback systems, transaction records, cancellation rate, and late shipment rate (Chen et al., 2022). However, this study was able to name multiple different governance metrics used by case firms. These metrics are a way to collect data and construct it meaningfully to create evaluations for platform users' behaviour and performance. Moreover, this study helps to understand how digital platforms can govern with use of data. For instance, metrics found in activity monitoring were clicks, logins, field use, and gigs looked at, which helps to measure how active the platform worker is on the platform.

Fifth, the case companies' differences in the use of governance mechanisms and metrics were found to be reasoned through the level of autonomy and skill level of the platform workers. The chosen governance mechanisms can impact the relationship between the platform firm and the platform worker. Different kinds of companies might need different mechanisms based on their level of relationship with the platform workers. For

instance, regarding reputation monitoring, the platform owner's use of the mechanism varied. Case company 1 did not use them, whereas case companies 2 and 3 did use them, which could be because of the different levels of control in the companies and thus different levels of workers' autonomy, as Kuhn and Maleki (2017) note. The reason why case company 1 is not using those mechanisms might be because of their platform worker's high level of autonomy.

Moreover, the different skill levels of the platforms might be a reason for the differences between the case firms. It might cause different ways of using the incentives. Differences might be caused that consults getting a higher payment anyway. However, the small bonus might encourage young workers or workers with low wages. The incentive management that the case companies used were somewhat different from each other. Gamification, collaboration, organisation help, and financial incentives all are to encourage certain behaviour and performance. The incentives used were still quite a few, which could be because there is not much competition in the markets for the case companies to get platform workers and encourage their behaviour. Competition in the markets for the amount and quality of platform workers could raise the need for better incentives.

Moreover, training was used differently in the case companies. Training for platform usage was used in all case companies. In contrast, work training was used in case company 2 and case company 3, and that could be because in case company 1 is working in the business domain of already highly skilled platform workers, which are consults and probably already have some education and knowledge about their work when they access to the platform. However, case companies 2 and 3 might have to train some of their platform workers since the work is different and not requiring certain skills already when accessing the platform. At least, that is the case in some of the work offered on those platforms. Kuhn and Maleki (2017) note that platform workers might vary in required skill levels and duration of their work for a certain customer.

5.2 Managerial implications

The study findings show how digital platform firms can better plan and make decisions about their platform governance mechanisms and measures with updated knowledge. In addition, the aim was to help managers strategically create measures to govern platform workers better. Considering governance mechanisms and metrics, the findings illustrate mechanisms for the platform owner to coordinate and control platform workers. These findings can be important for managerial implications for digital labour platform companies, showing them different governance mechanisms and metrics possibilities and their use for governing platform workers.

Moreover, this study gives managers a valuable tool that helps to situate their platform workers. Figure 7 can be used as a tool for situating firm's platform workers according to their autonomy and skill level. Also, the kind of business the firm possess impacts the suitable autonomy level and skill level of platform workers. Some firms need more autonomous workers and more highly skilled workers.

Also, skill level can impact governance and autonomy. If the platform workers are highly skilled, they require special training rather than basic training to keep their knowledge updated. Usually, they can be more autonomous and needs less governance. However, it should be noted that the dimensions are continuous, and various factors might affect them. The tool can help managers to adjust the level of governance according to the autonomy or the skill level of the platform workers.

In addition, Figure 9 gives various metrics that can be used to govern platform workers. For instance, digital platform owners can notice various measures for activity monitoring. Logs-ins and system usage give the possibility to track the user activity. When there are metrics to measure performance, it is easier to enhance it when there is a need. Also, decisions can be based on them. However, it is important to use comprehensive metrics and to ensure they measure what is supposed to measure. For instance, tests

should be made to tell the realistic training success, so they should be demanding enough.

5.3 Suggestions for future research

The digital platform economy enables flexible working hours and a low threshold to become self-employed and facilitates the acquisition of income regardless of the employee's social status (EURES, 2022). The problems of digital platform work include that workers are classified as self-employed in most companies' digital platforms, leading to the tramping of workers' rights (EURES, 2022). Digital platform workers, in most cases, have no access to labour protection, which usually includes health and safety protection, social security, collective bargaining, and labour protection (EURES, 2022).

Determining the platform workers' professional status based on a set of criteria would enable platform workers to participate in employee rights and social rights (Euroopan Komissio, 2021). These rights could include the minimum wage, reasonable working hours, collective bargaining, and health care (Euroopan Komissio, 2021). Moreover, digital platform workers include many young people (EURES, 2022), and they might have little knowledge of their rights in general. The European Commission suggested a directive to improve platform workers' conditions in platform work in December 2021. The suggestion is about criteria which is the basis to determine whether the platform is considered an employer (EURES 2022). As a result, 1.7 to 4-1 million people might be classified as workers, whereas some might become truly self-employed (EURES, 2022). Platforms then can adapt their business models (EURES, 2022). This is something that platform owners should be prepared for in terms of contract management.

Future research could study how the platform workers' conditions could be improved. In addition, work hours and income while working as in digital platform worker are often unpredictable and determined based on algorithms (EURES, 2022). Thus, increasing transparency and accountability in algorithm management on digital labour platforms is

an important goal (Euroopan Komissio, 2021). The aim is to make more understandable principles for dividing tasks and determining prices for digital labour workers (Euroopan Komissio, 2021).

Moreover, the goal is to support the dialogue between labour market parties and collective bargaining. Suggestion requires informing and hearing the platform workers about the decisions based on algorithm management (Euroopan Komissio, 2021). For instance, based on the case firms' interviews, every firm used an algorithm for at least some part in the decision-making. Whether the platform workers were aware of this did not come up in the interviews, but that would be one subject to study further.

Platform work and its concepts are still very new to the public, and there are many ways to understand what it is and how it changes working life (Immonen, 2021). Immonen (2021) writes that platforms change how work is done and organised. Thus, one interesting research topic could be further study of how the platform's work has altered working life.

5.4 Limitations

The study's limitations pose weaknesses to the credibility of its results and should be acknowledged. The study used a qualitative method, which provided deep knowledge of the case companies in the study but not very generalisable results, as Yin (2009, p. 15) notes considering the case study method. Hence, the interpretations' limited nature was understood. However, it is not weakening the result's valuableness. To add comparability to the results, this study used multiple cases that differed from each other. The qualitative study aim is not to bring highly generalisable results but rather deep and rich descriptions of the case firms. According to Merriam and Tisdell (2015, p. 249), data saturation refers to the same things coming up, and no new information surfaces when collecting data. It is possible that new information would have come up if new interviews

were taken. However, because of the time limits and amount of data, three cases seemed reasonable, and four interviews gave a rich amount of information.

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Appendices

Interview questions

1. Is there some governance mechanism in place to govern supply-side users who provide the service on the platform?
   If yes, what is important to measure users' value-creating performance and results on the supply side?

2. Is there a mechanism to determine which potential supply-side users can join the platform?
   If yes, how do you evaluate which supply-side user can join the platform? What kind of data and metrics are used to evaluate it?

3. Is supply-side users' reputation monitored on your platform?
   If yes, how do you evaluate the reputation of a supply-side user? What kind of data and metrics do you use to evaluate it? This could include such as ratings and reviews.

4. Is there a mechanism to control the quality of supply-side user results on your platform?
   If yes, what kind of data and metrics is used to evaluate the supply side user's work quality? This could include such as transaction records.

5. Is task management used on your platform? This could include such as subtasks and goal setting.
   If yes, what data and metrics are used to evaluate supply-side users' task performance?

6. Is incentive management for supply-side users used on your platform? This could include such as financial incentives.
   If yes, what kind of data and metrics are used to evaluate supply-side users?

7. Is contract management used in your platform? This could include such as work terms and agreements.
   If yes, what kind of data and metrics are used to evaluate the implementation of supply-side user agreements?

8. Is the behaviour of supply-side users controlled and monitored on your platform?
   If so, what kind of data and metrics govern supply-side users' desired behaviour and misbehaviour?

9. Are supply-side users trained in your platform?
   If so, what kind of data and metrics are used to govern the development and training of supply-side users?

10. Is there any other governance mechanism used to govern supply-side users in your platform?
    If so, what kind of data and metrics are used to evaluate the performance of supply-side users?