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EXPLORING ISSUES AND CHALLENGES IN CROWDSOURCING PLATFORM: A SYSTEMATIC LITERATURE REVIEW (SLR)

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Abstract:

Following the outbreak of the COVID-19 pandemic, many individuals have shifted from traditional employment to digital work to mitigate job and income losses. This shift has created opportunities to engage in multiple forms of freelancing and online business with the help of the Internet and technology. They can now perform various freelance jobs at flexible hours and connect virtually with customers across the globe. In line with the current technology trend, many people are turning to crowdsourcing platforms as means of finding a job. However, a borderless world also poses significant challenges, which this paper seeks to explore, particularly the difficulties of digital workers using crowdsourcing. The open accessibility of crowdsourcing platforms, often without adequate security protection, exposes them to risks and difficulties that complicate their work experience. This study employed a Systematic Literature Review (SLR) involving SCOPUS and Web of Science (WOS) databases. Only 7 articles that met the inclusion criteria were included in the study out of the 44 records. The findings revealed that three themes emerged: (1) exploitation and power imbalance, (2) recognition and online community support, and (3) crowdsourcing platform dependency. In conclusion, in the fast-moving digital era, it is imperative to provide protection, support and specific legal measures to address the critical needs of digital workers. Such efforts are crucial to advancing the national agenda for the digital economy by 2030.

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Crowd Workers, Crowdsourcing Platform, Issues and Challenges, Systematic Literature Review (SLR)



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Introduction

After the wave of COVID-19 pandemic hit the world in 2020, many people have shifted from traditional to digital work in order to survive from job and income losses (Nuramalina et al., 2021). This shift has created opportunities to engage in multiple forms of freelancing and online business with the help of the Internet and technology. They can now perform various freelance jobs at flexible hours and connect virtually with customers across the globe. In line with the current technology trend, many people are turning to crowdsourcing platforms as a means of finding a job, especially among unemployed people. In Malaysia, the statistics have recorded that the unemployment rate is decreasing by 0.1% (3.3% of 2024) compared to the previous rate (3.4 of 2023) (Department of Statistics Malaysia (DOSM), 2024). Although the difference is small, it still reflects the growing participation in the digital labour market (Horton et al., 2017).

However, a borderless world also poses significant challenges. Based on statistics from Royal Malaysia Police (PDRM), online crime has increased by 37%, while online job scams rose from 23,608 to 32,366 cases, which resulted 1.13 billion (The Star, 2023). This situation is particularly concerning, especially among newcomers who are still inexperienced in the digital crowdsourcing world. According to Xie et al. (2023), many job scam cases target unemployed individuals by offering attractive incentives such as high remuneration. Thus, this underscores the need to further explore to better understand its complexities and the extent of its consequences. Specifically, this paper seeks to explore, particularly the difficulties of digital workers using crowdsourcing. The open accessibility of crowdsourcing platforms, often without adequate security protection, exposes them to risks and difficulties that complicate their work experience. In the context of crowdsourcing, the decision to accept or reject a crowdsourcing task is entirely under the control of the crowd worker (Emmanuel et al., 2020). The voluntary nature of such work may encourage workers to take risks and accept questionable work, while leaving them uncertain about the credibility of those who ask them to work. Although workers are expected to get fair rewards upon task completion, some job requesters can use certain tricks to deceive workers without paying or withholding appropriate payment.

Another challenge faced by digital workers is competing with other crowds who are more experienced and highly skilled, and actively bidding for jobs (Alauddin et al., 2025). The beginners with low skills are often limited to bidding for small and tedious work with minimal pay, while facing intense competition from other new bidders. Task selection is therefore essential to ensure that the task offered matches the capability of the crowd worker (Chen et al., 2018). Proper matching not only safeguards the quality of the task but also helps save time and money, as the correct task is assigned to the right digital workers.

Therefore, this study aims to systematically review and synthesize the challenges experienced by digital workers engaged in crowdsourcing platforms. To address these concerns, the present study examines the problems that arise in task assignments related to crowd workers' participation in accepting tasks from an academic perspective. This will deepen understanding of the root causes of these issues, potentially inspiring further research to explore additional opportunities and innovative approaches.

Literature Review

The Definition of Crowdsourcing

Prominent scholars such as Jeff Howe (2006) first coined the term crowdsourcing, defining it as “the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call”. An open call refers to making tasks publicly available online through crowdsourcing platforms, where tasks are outsourced to a crowd of individuals to be performed, and completed tasks are assigned on behalf of the job provider (Zakariah et al., 2018). The “crowd” refers to individuals with diverse expertise, knowledge, and skill who may contribute innovative solutions or help solve problems (Heikal Husin & Suhaimi Baharudin, 2021). Some scholars refer to them as crowdworkers, digital workers, or freelancers, but it constitutes the same group (Estelles & Gonzalez, 2012). The following presents the discussions of crowdsourcing's definitions by various scholars:

Table 1: Self-illustrated Table Related to the Definition of Crowdsourcing

Authors' name	Title	Definition
Alelyani (2025)	Optimizing software crowdsourcing requirements design through machine learning	“Crowdsourcing, a distributed <i>computing model on the internet</i> , has opened new avenues for software development.”
Janom et al., (2020)	Multi-perspectives crowdsourcing ecosystem in Malaysia	“Crowdsourcing has been recognized as a growing industry that can <i>serve as a platform to generate additional income and provide businesses</i> with opportunities to conduct their operations in more innovative ways.”

Ikediego et al., (2018)	Crowdsourcing (who, why, and what)	“Crowdsourcing has been recognized as <i>a new way for companies to offer opportunities for individuals outside the organization to apply their expertise</i> and utilize their time effectively by earning additional income through a crowdsourcing platform.”
To (2018)	Location Privacy in Spatial Crowdsourcing Spatial Crowdsourcing: A Survey and Taxonomy of a Growing Field View Project Big Data for Disaster Response View project	“A type of <i>online crowdsourcing where performing tasks requires workers to physically be present</i> at the locations of the tasks, termed spatial tasks.”
Garcia et al. (2014)	The wisdom of crowds: The potential of online communities as a tool for data analysis	“A creation of <i>open innovation, the online crowdsourcing community</i> has become a critical source of innovation and knowledge dissemination, enabling the online public to give full play to their talent.”
Brabham (2008)	Crowdsourcing as a Model for Problem Solving: An Introduction and Cases	“Crowdsourcing, known as an <i>online distributed problem-solving model</i> that approaches crowds and asks for contributions, can help organizations develop solutions to a variety of business challenges.”

Based on Table 1, scholars offer a variety of interpretations of crowdsourcing, influenced by their diverse backgrounds and areas of interest. Brambham (2008) and Alelyani (2025) emphasised that crowdsourcing is one of the innovative digital models that enables individuals and organizations to collaborate online for problem-solving which highlight the transformed of traditional software development into decentralized approach based on a potential for use beyond for profit sectors. Meanwhile, Janom et al. (2020) and Ikediego et al. (2018) highlighted that crowdsourcing serves as a platform for additional income generation among digital workers that could help for strategic development and socioeconomic production. In addition, Garcia et al. (2014) and Alelyani (2025) focused on its role in creative production, illustrating how crowdsourcing effectively connects organizations with skilled contributors. To (2018) mentioned a type of online crowdsourcing tasks where performing tasks requires workers to be physically present at the locations of the tasks (spatial task). The findings based on these 6 scholars emphasize that crowdsourcing as a medium for communicating in any online network has an impact on each study that has been done.

Key Actors in Crowdsourcing Platform

According to Ikediego et al. (2018), a crowdsourcing platform serves as a meeting place where job providers find talent and skilled digital workers find employment opportunities. Zakariah et al. (2018) further emphasised that such a platform plays a crucial role in the micro-sourcing ecosystem by facilitating the connection between the task provider and the crowd worker. Previous studies have mainly focused on these two actors: job providers and crowd workers (who performed and submitted tasks assigned by the job provider through the platform) (Zakariah et al., 2018; Kietzman, 2017; Mahmud & Hassan, 2020; Onuchowska & De Vreede, 2018; Xie et al., 2023; Zhen et al., 2021). This can be explained when they receive instructions to perform the tasks and then submit them to the platform for the subsequent stages.

In practice, task allocation involves two processes: task selection and worker selection, since a task may be carried out by an individual or a group (Yin et al., 2017). Understanding the crowdsourcing process requires recognizing three key actors: job providers (also known as clients), crowd workers, and the crowdsourcing platform. The flow begins when a job provider uploads a task, in which the crowd workers accept the task often through the bidding process before completing the task and receiving payment or reward. This has shown that crowdsourcing platforms expand employment opportunities for many people seeking flexible or digital jobs (Carvalho et al., 2016).

Besides, crowdsourcing platforms have become an integral part of digital technologies, as people increasingly rely on them to secure jobs online. This is apparent in the rapid growth of the gig economy, which increased from 18.5% in 2018 to 30% in 2020 (Kalai & Foo, 2024). Given the advantages offered by crowdsourcing platforms, particularly as the main source of job opportunities, crowdsourcing platforms have now become a major resort for many unemployed people to secure a digital job. In Malaysia, there is an increasing number of youths who are turning to jobs online, especially in the gig economy sector such as e-hailing services (online to offline). According to Mohd Hed and Rosli (2025), this growth is driven by the flexibility and income potential of such jobs, alongside factors such as unemployment and mismatch of job requirements.

Additionally, the digital platform is closely interrelated to Information and Communication Technology (ICT), which acts as a catalyst for economic growth. This is reflected in the widespread use of integrated and enabling applications that support both production and consumption of goods and services (Agustina & Pramana, 2019). Deng and Joshi (2016) further highlight that integrating the IT infrastructure is crucial for sustaining the motivation of crowd workers and long-term engagement with online crowdsourcing platforms.

Crowdsourcing in Malaysia: Evolution and Government Initiatives

Globally, crowdsourcing has evolved into a range of widespread concepts, particularly in business models. Crowdsourcing can be a way to raise funds through platforms such as Kickstarter (2008) and Indiegogo (2009). Over time, it expanded into other sectors, including freelance labor. However, the adoption of crowdsourcing in Southeast Asia has attracted attention, especially in Singapore, Indonesia, Thailand, including Malaysia (Metri, 2019). One of the initiatives proposed among Asian countries is a collaboration between Malaysia and the Philippines. The Ministry of Women, Family, and Community Development of Malaysia, Universiti Utara Malaysia, and the Council of ICT Education Deans (Region IX) of the

Philippines have introduced a crowdsourcing application that enables women to generate income. Launched in early 2018, the initiative aims to equip 400 women in Malaysia and the Philippines with the skills needed to use the MyHelper crowdsourcing application (Metri, 2019). Based on Table 2, several government initiatives have been implemented to provide job opportunities and promote income generation through online crowdsourcing platforms.

Table 2: Self-Illustrated Several Programs and Initiatives Implemented by Government Related to Digital Workers in Malaysia

Initiative	Year Launched	Main Objective	Sources
eRezeki/eUsahawan	2015	To provide an extra income for Malaysians through a digital platform	MDEC (2025)
Global Online Workforce (GLOW)	2018	To provide intensive training to individuals seeking to enter the freelance economy	MDEC (2022)
Malaysia Co-Investment Fund (MyCIF)	2019	Create a more efficient and visible channel to disburse government funds to MSMEs.	Securities Commission Malaysia (n.d.)
MYDigital workforce Work in Tech (MYWIT)	2020	Aim to support companies in employing digital talent through salary and training incentives.	MalaysiaKini (2022)

The Malaysian government has increasingly incorporated crowdsourcing into its national digital economy strategy 2010 until now. As part of its comprehensive efforts to close the digital gap and encourage inclusive growth, the government has rolled out various digital initiatives aimed at enabling individuals, especially those in the B40 (bottom 40% income) group, to earn a sustainable income through online platforms (Hamid et al., 2020). These initiatives, such as eRezeki and eUsahawan, are based on the principles of the sharing economy and crowdsourcing models. Their goal is to link people, particularly from underprivileged communities, with micro-tasking opportunities, freelance digital jobs, and training for digital entrepreneurship (MDEC, 2020). Although distinct in their design and implementation, these programs share a unified objective: to enhance digital participation and reduce income inequality through inclusive digital employment ecosystems.

Several government initiatives have demonstrated notable success in promoting online crowdsourcing jobs and digital inclusion. For example, by the end of 2016, the eRezeki program had enabled participants to earn over RM1.3 billion, with a significant number of beneficiaries originating from the B40 demographic (Corporate Malaysia, 2017). These outcomes highlight the potential of crowdsourcing as a tool for inclusive economic development and digital empowerment in emerging economies such as Malaysia. In addition to other initiatives, the Malaysian government introduced the Global Online Workforce (GLOW) program in 2018 to support individuals entering the digital freelancing sector, particularly among crowd workers. GLOW, implemented by the Malaysia Digital Economy Corporation (MDEC), offers structured training for aspiring digital freelancers, equipping them

with essential skills to navigate global crowdsourcing platforms such as Freelancer.com and Upwork.

This initiative aims to empower Malaysians, especially unemployed graduates and individuals with technical expertise, by enhancing their employability in the growing gig economy. Moreover, the GLOW program has been acknowledged for its contribution to Malaysia's overall digital economic strategy. According to Datuk Seri Dr. Adham Baba, the digital economy accounted for around 22.6% of the nation's Gross Domestic Product (GDP), highlighting the important influence of such initiatives on national economic advancement (The Star, 2022). By promoting freelance work through structured support and training, GLOW serves as a key mechanism to integrate more Malaysians into the global digital workforce.

In addition, the government established an initiative via the Malaysia Co-Investment Fund (MyCIF) under Budget 2019, managed by the Ministry of Finance (MOF) and overseen by the Securities Commission Malaysia (SC). This program was initiated to support micro, small, and medium enterprises (MSMEs) as well as social enterprises by co-investing with private investors through Equity Crowdfunding (ECF) and Peer-to-Peer (P2P) financing platforms (Diyana Isamudin, 2024). The program has successfully attracted investor participation. According to Securities Commission (SC) Chairman Datuk Seri Dr. Awang Adek Hussin, MyCIF facilitated nearly RM2 billion in private investments through a government co-investment of RM289 million in the previous year (Diyana Isamudin, 2024).

In the year 2020, the government introduced MyDigital Workforce Work in Tech (MYWIT), which targeted employers to hire workers in this country for technology and digital services professions through salary and training incentives (Ministry of communication, n.d.). This initiative was established to offer digital training to the public, focusing on unemployed individuals, to develop their skills and elevate their digital competencies. Generally, companies receive assistance in employing new graduates, jobless Malaysians, or workers who have been laid off from any field for positions in the digital industry throughout this program, and can reduce the company's cost of training, as most of the employees hired are already experts in the digital workforce, as they have been given exposure in MYWIT.

Issues and Challenges in Crowdsourcing

Heikal et al. (2021) claimed that crowdsourcing is a disruptive technological trend that impacts the traditional labor market. Crowdsourcing acts as a broker for clients and workers. As a result, people are changing the way they find jobs, shifting from traditional labor markets to online platforms through digital crowdsourcing platforms. However, even though technology is accessible to everyone without sufficient security protections, it presents opportunities for issues and challenges, especially among unemployed individuals who may fall into the dark side of recruitment more easily (Xie et al., 2023).

The challenges and issues faced by both parties involved between job providers and crowd workers, especially regarding pricing in the crowdsourcing platform (Xie et al., 2023). The key to pricing on the crowdsourcing platform lies in decision-making concerns about monetary rewards. The situation appears when they need to pay extra to the crowd workers with special qualifications for their skills. Some still argue that crowd workers struggle with low hourly incomes, considering monetary rewards as a source of dissatisfaction due to perceived underpayment (Whiting et al., 2019). Haidar & Keune (2021) stated that there is a frustrating

debate when workers from developed countries are discontent with hourly salaries compared with the national average. The fact that pricing remains a contentious issue on crowdsourcing platforms creates tension between job providers and crowd workers, since providers need to balance the costs when higher pay is required for skilled tasks (Haidar & Keune, 2021; Tıtan et al., 2014; Whiting et al., 2019; Xie et al., 2023).

In this section, the challenges that arise when running a crowdsourcing platform, where crowd workers need to be managed, include Online Recruitment Fraud (ORF). Vidros et al. (2017) identify Online Recruitment Fraud (ORF) as a type of malicious activity intended to invade privacy. This can be supported by the survey conducted by Flex Jobs in 2015 revealed 60 fraudulent jobs for every legitimate job posting (Vidros et al., 2016). Due to that, 7% of crowd workers become victims of this fraudulent job. This creates challenges for crowd workers, especially on online platforms, when crowd workers fall victim to online recruitment fraud (ORF). Most of the crowd workers who fall into this trap usually get into the dark side of recruitment when fake advertising uses emphasized text and the absence of valid Hypertext Markup Language (HTML) list formatting in job requirements and benefits (Pandey et al., 2022). Therefore, the crowd worker is easily scammed by the fake advertisement about job availability.

Besides, changes in the climate when the new crowd workers have to cope with the challenges in which they have to face a growing number of fake projects or scammers available on almost all crowdsourcing websites, is one of the challenges for crowd workers (Dawson & Thomson, 2018). In such cases, crowdsourcing platforms can negatively impact crowd workers as they are being scammed by the organizations that provide the jobs. Malaysia has seen a significant increase in online fraud over the past two years during the COVID-19 pandemic. According to the Royal Malaysia Police (PDRM) Corporate Crime Investigation Division (CCID), a total of 71,833 fraud attempts were reported from 2020 to May 2022, resulting in losses of over RM5.2 billion (Balqish Salleh, 2022).

Highlighting the issues and challenges in crowdsourcing platforms contributes to the impact on crowd workers who find a job digitally. Numerous studies have concluded that challenges in crowdsourcing platforms create an environment ripe for fake job opportunities to offer (Akma et al., 2021; Carpenter et al., 2019; Xie et al., 2023). This can be seen to impact security concerns. Newcomers could also establish a novel form of digital etiquette that fosters the anticipation of being 'constantly accessible online'.

Methodology

A Systematic Literature Review (SLR) was conducted using Scopus and Web of Science databases following established review protocols. From 44 identified records, seven studies met the predefined inclusion and exclusion criteria and were subjected to thematic analysis. According to Mengist et al. (2020), SLR refers to the process “a process that allows to collect relevant evidence on the given topic that fits the pre-specified eligibility criteria and to have an answer for the formulated research questions”. This method is particularly helpful in addressing the main objective of the study, as it enables a structured review of selected scholarly works, with a specific focus on the issues and challenges in crowdsourcing. SCOPUS and the Web of Science (WOS) were the two databases selected. The Systematic Literature Review (SLR) was conducted by following three (3) key steps: (1) planning; (2) screening; and (3) reporting. This approach is consistent with Rahman et al. (2023), who applied these key steps to synthesize

input from relevant literature. Thematic analysis was employed to analyse and examine the issues that arise when crowd workers seek employment on a crowdsourcing platform. The initial coding was generated manually from selected scholarly works and subsequently organized into potential themes and sub-themes based on recurring patterns. To ensure a clear structure, the main themes and sub-themes were further refined and defined, refined and systematically reported (Dawadi, 2020).

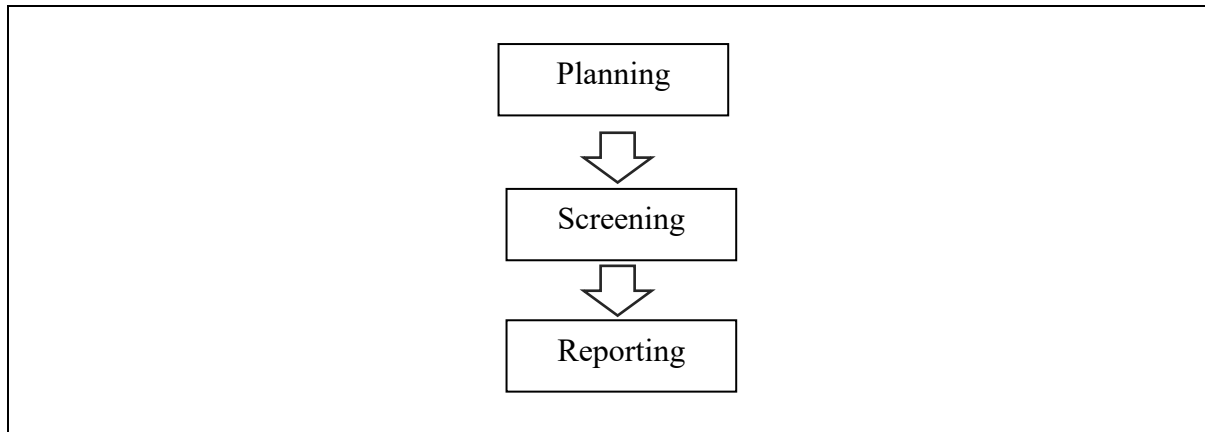


Figure 1: Steps in Systematic Literature Review (SLR)

Planning Phase

Two platforms, Scopus and Web of Science (WOS), were used to search for the relevant articles, in the first phase known as the identification stage. These platforms were chosen because they are equipped to collect relevant research papers upon which comprehensive reviews were done and reputable sources of reliable data (Rahman et al., 2023). As indicated in Table 3, 4 records were obtained using two search strategies (Refer to Table 3). The identification phase allows researchers to determine the volume of studies conducted in this field. Since the terms "crowd workers" and "freelancers" are often used interchangeably in previous research, both terms were included without intending to restrict the search quantity. Several trial searches were performed to ensure the suitability of the selected keywords. Based on the search string, the selected database must record the number of retrieved articles accessed and the dates on which they were accessed (Amin et al., 2022).

Table 3: Planning Phase

Database	Search Strategy	Number of articles identified	Date of accessed
Scopus	"crowdsourcing platform" AND "challenges" AND ("crowd workers" OR "freelancers")	30 records	24 th November 2024
	"crowdsourcing platform" AND "security" AND ("crowd workers" OR "freelancers")	3 records	24 th November 2024

Web of Science (WOS)	“crowdsourcing platform” AND “challenges” AND (“crowd workers” OR “freelancers”)	9 records	24 th November 2024
	“crowdsourcing platform” AND “security” AND (“crowd workers” OR “freelancers”)	2 records	24 th November 2024
Total		44	

Table 4: The Inclusion and Exclusion Criteria Used to Select the Related Articles

Criterion	Inclusion criterion	Exclusion criterion
Year	5 years ago, to the current 2020-2024	More than 5 years
Language	English version	Other languages
Type of access	Open access	Except for open-access
Type of document	Journal (article) & conference paper	Other type of documents
Keywords used	Crowdsourcing platform, security, challenges, crowd workers and freelancers	Other than these keywords

Using the inclusion or exclusion criteria during the initial identification staged led to a total of 44 records being identified. According to Amin et al. (2022), applying these criteria helps narrow down the search, making the collected data more suitable for further analysis. The selection of the scholar's works focused on publications from the past five years (2020 to 2024), ensuring that only recent publication was included. The article search was completed using the following keywords: (1) "crowdsourcing platform" AND "challenges" AND ("crowd workers" OR "freelancers"), and (2) "crowdsourcing platform" AND "security" AND ("crowd workers" OR "freelancers"). The keywords challenges (keyword 1) and security (keyword 2) served as the two primary keywords applied across the search strategies.

Screening Process and Eligibility Phase

During the screening procedure, 37 out of 44 articles were excluded, due to the removal of 8 duplicates and 29 because they did not meet the inclusion criteria. Table 5, only 39 records for keyword 1 (challenges) and 5 records for keyword 2 (security) passed the screening phase. According to Abdul et al. (2023), only studies that satisfy the eligibility criteria should be retained for further analysis. From 44 retrieved records, only seven studies satisfied the eligibility criteria after a rigorous screening. This briefly considers the strict screening process

as consistent with PRISMA guideline that highlights that the study with full satisfaction with predetermined eligibility criteria retained the validity and reliability of the outcome (Page et al., 2021).

Table 5: Screening Process

Words string	Number of articles identified for screening
"Crowdsourcing platform" AND "challenges" AND ("crowd workers" OR "freelancers")	39 records
"Crowdsourcing platform" AND "security" AND ("crowd workers" OR "freelancers"),	5 records
Total	44 records

Included Phase

In the final phase, 7 articles were carefully reviewed to extract and significantly reflect the data required to address the research question and the issues associated with providing crowd workers with challenges and security. Given this, only 7 publications fit the inclusion criteria and were included in the study.

Table 6: Number Of Articles Included In The Analysis

Words string	Number of articles included in the analysis
"Crowdsourcing platform" AND "challenges" AND ("crowd workers" OR "freelancers")	6 records
"Crowdsourcing platform" AND "security" AND ("crowd workers" OR "freelancers")	1 record
Total	7 records

Findings and Discussion

The overview below presents the final seven scholars' works, organized by the emerging themes. The time frame of these seven scholars' works spans the past five years, with publications originating from several countries, including the United States, the United Kingdom, the Netherlands, China, and the Republic of Korea. The majority of scholars' work that fit the inclusion criteria was presented at the conference, with only two scholars having published in journals.

Table 7: An Overview of the 7 Articles' Analysis

Theme	Year, Origin Country	Scholars' name	Findings
Exploitation and power imbalance	2022	<i>Yasamin, Eric & Stacie</i>	1. Fairness concerning compensation and governance: discontent with the payment received.
	United States		2. Transparency: description process for rating and rejecting. 3. Open and direct communication: feedback from job providers, such as reasons for rejection. 4. Dignity and respect: recognise and appreciate their work. 5. Accountable: not paid without due cause. 6. Marginalisation: policy, economy, technology, psychological, and competence.
Recognition and online community support	2022	<i>Abbas & Gadiraju</i>	1. Lack of research on how crowd workers commit their thoughts and actions to goal achievements.
	United States and United Kingdom		2. Crowd workers may face some issues and challenges, such as medical issues, lack of motivation, financial constraints, lack of software tools, busy lifestyle, and unanticipated events may disrupt goal achievement.
	2024	<i>Groot & Gadiraju</i>	1. The crowd workers may not always feel connected to their remote peers. 2. Workers on many microtask crowdsourcing platforms work on tasks individually and are seldom directly exposed to other crowd workers. 3. This study aimed to investigate whether it could foster a sense of group identification among crowd workers by providing a worker community space where workers

could share their personalised worker avatar and how the tasks made them feel.

4. The evolving and customizable worker avatars can positively impact worker retention without decreasing accuracy.

Crowdsourcing Platform Dependency	2023	<i>Yao Ma, Abbas & Gadiraju</i>	<ol style="list-style-type: none"> 1. Having many crowdworkers on demand create great challenges. 2. ContextBot is an effective tool to help crowdworkers with crowdsourcing tasks through conversations
	Netherlands		
	2020	<i>Zhang, J. Chen, H. V. Jagadish, Zhang, M. and Tong.</i>	<ol style="list-style-type: none"> 1. The main issue is that crowd workers in schema matching are returning the correct answers, which creates uncertainty. 2. Inconsistent worker accuracy 3. Efficient question allocation.
China			<ol style="list-style-type: none"> 1. The main issue is selecting the quality crowd workers. 2. Crowd workers have different attributes- qualification, age, gender, language, location, skills, past service, and experience. These characteristics are used to select crowdworkers
	2021	<i>Wang, Ali, Yang, Nadzir, Khan & Imtiaz</i>	<ol style="list-style-type: none"> 3. An organization's success depends on assigning the right tasks to crowdworkers, which requires proper control systems, such as screening workers. 4. Selecting the crowdworkers using multiple criteria features. Previous approaches used only few criteria, which could lead to poor worker selection and cause negative affects the crowdsourcing activity.
	Republic of Korea	Multicriteria- Based Crowd Selection Using Ant Colony Optimization	
		The selection of crowd workers	

2021	<i>Sabetpour, Kulkarni, Xie, Li Q.</i>	<ol style="list-style-type: none"> 1. Human errors due to the lack of expertise of the crowd workers. 2. Expert annotation is expensive. 3. Difficulties in handling sequences.
United States	Truth Discovery in Sequence Labels from Crowds Lack of expertise	

Based on the findings, three themes related to issues and challenges of crowdsourcing emerged, including: (1) exploitation and power imbalance; (2) recognition and online community support, and (3) crowdsourcing platform dependency.

Exploitation and Power Imbalance

The first theme that emerged from SLR findings is exploitation and power imbalance. This happens when crowd workers receive unfair treatment in return for their effort in completing tasks. Such treatment includes low payment, ambiguous feedback from job providers, unclear reasons for rejection, and a lack of policy that specifically addresses the rights of digital workers.

In the study by Yasamin, Eric, and Stacie (2022), it was found that the compensation for microtasks does not match the effort required to complete them. In some cases, the payment is unreasonably low, and some crowd workers do not receive payment at all, without any valid justification. It is imperative to emphasise fairness, especially when crowd workers complete tasks as requested by the job provider. Additionally, some microtasks appear unreasonable to the crowd worker, such as receiving a large volume of tasks with tight deadlines. Microtasks are often tedious tasks and require full concentration to be completed effectively. Many crowd workers felt exploited and taken advantage of by the job provider. This unfair treatment contributes to a significant power imbalance.

Moreover, some job providers do not justify the rejection or offer any feedback to the crowd worker. Without transparency in how tasks are rated and accepted, crowd workers are unable to identify their shortcomings or improve their performance. Additionally, crowd workers have limited knowledge about job providers, whereas the job provider typically has access to more information about crowd workers. As a result, crowd workers face not only economic insecurity but also psychological stress, as they constantly compete for tasks under uncertain and unequal conditions. If such practices persist, they may further widen the power imbalance, ultimately diminishing the morale and productivity of crowdworkers.

Recognition and Online Community Support

The next theme is recognition and online community support. Crowd workers usually perform tasks individually and interact only with job providers. To address this, online communities have developed as vital spaces where crowd workers can find recognition, peer support, and a sense of belonging. Most of the time, they can complete micro tasks by following the posted instructions on the platform, without needing any further communication. According to Groot and Gadiraju (2024), crowd workers rarely collaborate with peer members and have limited

connection to their online community. The crowdsourcing platform itself also has limitations when it comes to facilitating communication between crowd workers. Due to limited access to information about other crowd workers, it is difficult to connect with them because there is no communication offered. In their study, Groot and Gadiraju (2024) proposed the creation of a community space with a personalized avatar to connect all the crowdworkers. This is crucial for fostering a sense of community and enabling them to share lived experience, expertise, and knowledge, as well as to gain recognition from others.

A study by Abbas and Gadiraju (2022) found that crowd workers face various internal issues and challenges that may hinder their ability and motivation. These issues include a lack of financial support, insufficient software tools, competing commitments and lifestyles, health problems, loss of motivation, and unexpected life events. The pressure is significant, as crowd workers often face these challenges independently, with the absence of support from a peer community. Despite these challenges, there is a lack of research exploring how crowdworkers commit their thoughts and actions to achieve their goals in crowdsourcing, as noted by Abbas and Gadiraju (2022). Their study aims to explore effective strategies to increase crowdworkers' motivation and resilience, helping them overcome barriers and strive for goal achievement.

Crowdsourcing Platform Dependency

The third theme is crowdsourcing platform dependency. The Yao Ma, Abbas, and Gadiraju (2023) emphasize the critical need for getting inputs from crowdworkers for response consistency, especially within an affective support tasks system. This input is imperative in producing a more emphatic and accurate response to address multiple users' needs by incorporating an understanding of varied cultural backgrounds and social norms. Thus, this system heavily depends on individual contributions to continuously improve its functionality. However, the availability of crowd workers remains a great challenge that may prevent timely and effective responses. In the study by Yao Ma et al. (2023), it was discovered that some crowd workers felt the system Context Bot provided limited information and lacked proper guidance to them. As a result, the crowd worker is unable to complete tasks effectively due to a lack of an effective support task.

Conclusion

The study contributes to the growing literature on digital labour by consolidating existing evidence on worker challenges and highlighting the need for stronger labour protections, platform accountability, and supportive policy frameworks. These measures are essential for ensuring sustainable participation in the digital economy and achieving national digital economy aspirations by 2030.

This study highlights the complex issues surrounding the operation of crowdsourcing platforms and their implications for crowdworkers. The systematic literature review identified three key themes: (1) exploitation and power imbalance (1 article out of 7 articles); (2) recognition and online community support (2 articles out of 7 articles); and (3) crowdsourcing platform dependency (4 articles out of 7 articles). Collectively, these challenges reveal that many platforms are struggling not only to ensure fair, transparent systems but also to adequately meet the diverse and evolving needs of their workforce. However, the main concerns include unfair compensation, lack of job security, absence of legal protection, and limited opportunities for career growth.

Besides, the findings revealed that many countries face persistent challenges in regulating and supporting crowdsourcing platforms, with several failing to address the basic needs of crowdworkers. These difficulties stem largely from the rapid expansion of digital labour markets, which creates demands that are complex and difficult to manage. Studies also highlighted that crowdworkers have different needs and expectations, making it hard for platform providers to design systems that are fair to all. Despite these concerns, the dependence on crowdsourcing is expected to keep rising. Due to that, a lot of issues appear, leading to challenges for crowdworkers in looking for a job through a crowdsourcing platform. Crowdworkers who are looking for a job with limited cybersecurity will be exposed to the threat and will fall into a trap due to the lack of a sense of security and awareness about issues in crowdsourcing platforms.

These issues must be addressed to ensure the provision of fair, secure, and supportive crowdsourcing platforms for crowdworkers. Therefore, it is important to enhance an important input to the platform in strengthening the security of crowdsourcing platforms. This is possible as the maker of the crowdsourcing platform finds a solution in a way that creates a system of security for the users (crowdworkers) and providers (job providers), ensuring the details or data of individuals are secure from external threats. In addition, it is very useful for unemployed people to understand and seek knowledge of the safety and security of the data once they find tasks or jobs in the crowdsourcing platform that may contribute to the security of their personal data.

Implication

The study conducted on the challenges and issues that appear in crowdsourcing platforms can have a bad impact on crowdworkers and job providers. Understanding crowd workers' needs for an online job since the changing of technology could be the main challenge for them. It sheds light on new directions to improve the sustainability of crowdsourcing for crowdworkers, job providers, and crowdsourcing platforms. Past research has mentioned the obstacles crowd workers face, such as exploitation and power imbalance, recognition and online community support, and crowdsourcing platform dependency. Acknowledging these issues may develop a guideline for crowd workers' discontinuous participation on the platform to avoid and prevent being a victim of a job scam.

Limitation and Recommendation for Future Research

These findings of the study cannot be generalized, as the focus was specifically on issues and challenges faced in crowdsourcing platforms. Moreover, it is difficult to capture the full extent of issues faced by crowdworkers, as scholars have not thoroughly examined aspects such as payment structures, task design processes, platform governance, and gaps in regulatory standards. The study's timeframe, which spans only five years (2020–2024), limits its ability to comprehensively explore the challenges associated with the operation of crowdsourcing platforms. Only seven scholarly works met the inclusion criteria and were included in the review. Perhaps, future research should therefore consider large pool studies to provide a broader insight into the subject. In addition, future research could also focus on less mainstream or niche platforms, where workers may face even more precarious conditions, limited protections, and weaker community support compared to those on large, well-established platforms. This limitation arises because the study's findings largely reflect challenges

identified on major, urbanised/global platforms. Nevertheless, the research adequately addresses the core objectives of the study.

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References

- Abbas, T., & Gadiraju, U. (2022). Goal-Setting behavior of workers on crowdsourcing platforms: An exploratory study on MTurk and Prolific. *In Proceedings of the AAAI Conference on Human Computation and Crowdsourcing, 10*, 2-13.
- Agustina, N., & Pramana, S (2019). The impact of development and government expenditure for information and communication technology on Indonesian economic growth. *Journal of Business Economics and Environmental Studies, 9*(4), 5–13. <https://doi.org/10.13106/jbees.2019.vol9>
- Ahmad, N., Astifar Alias, F., & Abdul Razak, A. (2023). Understanding population and sample in research: Key concepts for valid conclusions. *SIGCS: E-Learning, 6*, 19-24.
- Akma, S., Seman, A., Shahrom, M., Mohd, I. H., Hisham, T. B., & Besar, T. (2021). Avoidance behaviour towards digital crowdsourcing platforms: A preliminary study among New Freelancers. *In Advances in Business Research International Journal, 7* (3), 25-35.
- Alauddin, F. D. A., Aman, A., Ghazali, M. F., & Daud, S. (2025). The influence of digital platforms on gig workers: A systematic literature review. *Heliyon, 11*(1), e41491
- Alelyani, T. (2025). Optimizing software crowdsourcing requirements design through machine learning. *Scientific Reports, 15*(1). <https://doi.org/10.1038/s41598-025-04128-8>
- Amin, Z. M., Anwar, N., Mohd Shoid, M. S., & Samuri, S. 2022. Method for conducting systematic literature review (SLR) for cyber risk assessment. *Environment-Behaviour Proceedings Journal, 7*(SI10), 255–260. <https://doi.org/10.21834/ebpj.v7isi10.4130>
- Balqish Salleh. (2022), August 5. PDRM: Over RM5.2 billion lost to scams in two years. The Edge Malaysia. Retrieved at <https://theedgemalaysia.com/article/pdrm-over-rm52-billion-lost-scams-two-years>
- Brabham, D. C. (2008). Crowdsourcing as a model for problem solving: An introduction and cases. *Convergence, 14*(1), 75–90. <https://doi.org/10.1177/1354856507084420>
- Carpenter, D., Young, D. K., Barrett, P., & McLeod, A. J. (2019). Refining technology threat avoidance theory. *Communications of the Association for Information Systems, 44*(1), 380–407. <https://doi.org/10.17705/1CAIS.04422>
- Carvalho, A., Dimitrov, S., & Larson, K. (2016). How many crowdsourced workers should a requester hire? *Annals of Mathematics and Artificial Intelligence, 78*(1), 45–72. <https://doi.org/10.1007/s10472-015-9492-4>
- Chen, Y. Y., Lv, P., Guo, D. K., Zhou, T. Q., & Xu, M. (2018). A survey on task and participant matching in mobile crowd sensing. *Journal of Computer Science and Technology, 33*(4), 768–791. <https://doi.org/10.1007/s11390-018-1855-y>
- Corporate Malaysia. (2017). MDEC Aims RM40m Sales from e-rezeki, e-usahawan. The Malaysia Reserve. Retrieved at <https://themalaysianreserve.com/2017/04/03/mdec-aims-rm40m-sales-from-erezeki-eusahawan/>
- Dawabsheh, M., Hussein, A., & Jermsttiparsert, K. (2019). The triangular relationship between tqm, organizational excellence and organizational performance: A case of Arab American University Palestine. *Management Science Letters, 9*(6), 921–932. <https://doi.org/10.5267/j.msl.2019.2.010>
- Dawadi, S. (2020). Thematic Analysis Approach: A step by step guide for ELT research practitioners. *Journal of NELTA, 25*(1–2), 62–71. <https://doi.org/10.3126/nelta.v25i1-2.49731>
- Dawson, J., & Thomson, R. (2018). The future cybersecurity workforce: going beyond technical skills for successful cyber performance. *In Frontiers in Psychology, 9*(June), 744. <https://doi.org/10.3389/fpsyg.2018.00744>

- de Groot, E. C. S., & Gadiraju, U. (2024). "Are we all in the same boat?" customizable and evolving avatars to improve worker engagement and foster a sense of community in online crowd work. conference on human factors in computing systems – Proceedings, 1-26. <https://doi.org/10.1145/3613904.3642429>
- Deng, X. N., & Joshi, K. D. (2016). Why individuals participate in micro-task crowdsourcing work environment: Revealing crowdworkers' perceptions. *Journal of the Association for Information Systems*, 17(10), 648–673. <https://doi.org/10.17705/1jais.00441>
- Diyana Isamudin. (2024). MyCIF Co-Invests RM289mil to Spur Growth of MSMEs. *New Straits Times*. Retrieved at <https://www.nst.com.my/business/corporate/2024/05/1057351/mycif-co-invests-rm289mil-spur-growth-msmes>
- Garcia Martinez, M., & Walton, B. (2014). The wisdom of crowds: the potential of online communities as a tool for data analysis. *Technovation*, 34(4), 203–214. <https://doi.org/10.1016/j.technovation.2014.01.011>
- Hadavi, Y., Villafranca, E., & Petter, S. (2022). The duality of empowerment and marginalization in microtask crowdsourcing: A replication. *AIS Transactions on Replication Research*, 8, 1–18. <https://doi.org/10.17705/1attr.00073>
- Haidar, Julieta., & Keune, Maarten. (2021). *Work and Labour Relations in Global Platform Capitalism*. Edward Elgar Publishing Limited.
- Hamid, N., Haron, N., Anis Idayu Nik Abdullah, N., & Mohd Ali, M. (2020). The effectiveness of the e-rezeki digital platform in Kuala Selangor, Malaysia. *International Journal of Innovation, Creativity and Change*, 10 (1), 746-758.
- Heikal Husin, M., & Suhaimi Baharudin, A. (2021). online crowdsourcing platform continuous participation during COVID-19: A low-income group perspective in Malaysia. *Journal of Asian Finance*, 8(10), 317–0326. <https://doi.org/10.13106/jafeb.2021.vol8.no10.0317>
- Horton, J., Kerr, W. R., & Stanton, C. (2017). *Digital labor markets and global talent flows*. University of Chicago Press, 2017. 71-108.
- Ikediego, H. O., Ilkan, M., Abubakar, A. M., & Victor Bekun, F. (2018). Crowd-sourcing (who, why and what). *In International Journal of Crowd Science*, 2 (1), 27–41. <https://doi.org/10.1108/IJCS-07-2017-0005>
- Janom, N., Azhani, R. N., Aris, S. R. S., Bashah, N. S. K., Arshad, N. H., & Nadir, M. H. (2020). Multi-Perspectives crowdsourcing ecosystem in Malaysia. *Indonesian Journal of Electrical Engineering and Computer Science*, 19(1), 435–441. <https://doi.org/10.11591/ijeecs.v19.i1.pp435-441>
- Kalai Vani a/p Kalimuthu, & Dr Foo Chuan Chew. 2024. Gig economy participation: Is higher education remain relevant? Universiti Tunku Abdul Rahman. Retrieved at <https://news.utar.edu.my/news/2024/Jan/30/05/05.html>
- Kietzmann, J. H. 2017. Crowdsourcing: A revised definition and introduction to new research. *In Business Horizons*, 60(2), 151–153. Elsevier Ltd. <https://doi.org/10.1016/j.bushor.2016.10.001>
- King, I., Nejdl, W., Li, H., & Association for Computing Machinery. (2011). WSDM 2011 Hong Kong, Proceedings of the 4th ACM International Conference on Web Search and Data Mining: February 9-12, 2011, Hong Kong, China. Association for Computing Machinery.
- Liu, E., & Porter, T. (2010). Culture and KM in China. *VINE*, 40(3), 326–333. <https://doi.org/10.1108/03055721011071449>
- Ma, Y., Abbas, T., & Gadiraju, U. (2023). ContextBot: Improving response consistency in crowd-powered conversational systems for affective support tasks. *HT 2023 - The 34th*

- ACM Conference on Hypertext and Social Media*.
<https://doi.org/10.1145/3603163.3609031>
- Mahmod, M., & Hassan, H. (2020). Spatial crowdsourcing: opportunities and challenges in motivating Malaysian women's participation in gig economy. *2020 IEEE Conference on E-Learning, e-Management and e-Services, IC3e 2020*: 76–81. <https://doi.org/10.1109/IC3e50159.2020.9288436>
- Malaysia Kini. (2022). Mywit helps boost digital business services across industries. *Malaysia Kini*. Retrieved at <https://www.malaysiakini.com/brandedcontent/628845>
- MDEC. (2022). Earn more income as a digital freelancer (GLOW). *MDEC*. Retrieved at <https://mdec.my/glowmalaysia>
- MDEC. (2025). eRezeki. *MyGovernment*. Retrieved at <https://malaysia.gov.my/portal/content/30641>
- Mengist, W., Soromessa, T., & Legese, G. (2020). Ecosystem services research in mountainous regions: A systematic literature review on current knowledge and research gaps. *In Science of the Total Environment*, 702 (2020), 134581. Elsevier B.V. <https://doi.org/10.1016/j.scitotenv.2019.134581>
- Ministry of communication. (n.d). MYWiT bangun bakat digital Malaysia. *Ministry of Communication*. Retrieved at <https://www.komunikasi.gov.my/en/public/news/22275-mywit-bangun-bakat-digital-malaysia>
- Mohd Hed, N., & Rosli, N. A. (2025). Navigating the gig economy: What drives Malaysian youth? *Journal of Applied Youth Studies*, (2025), 1-24. <https://doi.org/10.1007/s43151-025-00192-z>
- Nicoletta Metri. (2019). In Southeast Asia, improving livelihoods through crowdsourcing. *Internet Society*. Retrieved at <https://www.internetsociety.org/blog/2019/02/in-southeast-asia-improving-livelihoods-through-crowdsourcing/>
- Onuchowska, A., & De Vreede, G.-J. (2018). Disruption and deception in crowdsourcing: Towards a crowdsourcing risk framework. *Proceedings of the 51st Hawaii International Conference on System Sciences (HICSS 2018)*, 3996-3975. <http://hdl.handle.net/10125/50386>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Systematic Reviews*, 10(1). <https://doi.org/10.1186/s13643-021-01626-4>
- Pandey, B., Kala, T., Bhoj, N., Gohel, H., Kumar, A., & Sivaram, P. (2022). Effective identification of spam jobs postings using employer defined linguistic feature. *2022 1st International Conference on AI in Cybersecurity, ICAIC 2022*. <https://doi.org/10.1109/ICAIC53980.2022.9897059>
- Rahman, M. A., & Rahman, M. M. (2023). Impact of crowdsourcing in organizations: A systematic literature review (SLR) and future research directions. *In J. Technol. Manag. Innov.* 2023, 18 (2), 81-90. <http://jotmi.org>
- Salleh, S. S., Zakaria, N., Janom, N., Syed Aris, S.R., & Arshad, N.H. (2022). Composing multi-relations association rules from crowdsourcing remuneration data. *Asia-Pacific Journal of Information Technology & Multimedia*, 11(1), 12-25.
- The Star. (2022). Malaysia's digital economy to contribute 22.6% to GDP, create half a million jobs by 2025. *The Star*. Retrieved at <https://www.thestar.com.my/business/business-news/2022/05/19/malaysia039s-digital-economy-to-contribute-226-to-gdp-create-half-a-million-jobs-by-2025>

- The Star. (2023). There are still many Malaysians falling victim to job scams, says Fadillah. <https://www.thestar.com.my/news/nation/2023/12/07/there-are-still-many-malaysians-falling-victim-to-job-scams-says-fadillah>
- To, H. (2018). Location privacy in spatial crowdsourcing spatial crowdsourcing: A survey and taxonomy of a growing field view project big data for disaster response view project. *Thesis Doctor of Philosophy*. <https://doi.org/10.13140/RG.2.2.24206.87368>
- Vidros, S., Koliass, C., & Kambourakis, G. (2016). Online recruitment services: another playground for fraudsters. computer fraud and security. *Computer Fraud & Security*, 2016(3), 8–13. [https://doi.org/10.1016/S1361-3723\(16\)30025-2](https://doi.org/10.1016/S1361-3723(16)30025-2)
- Whiting, M. E., Hugh, G., & Bernstein, M. S. (2019). Fair work: Crowd work minimum wage with one line of code. *In Proceedings of the AAAI Conference on Human Computation and Crowdsourcing*, 7, 197-206. <https://github.com/StanfordHCI/fairwork>
- Xie, H., Maddalena, E., Qarout, R., & Checco, A. (2023). The dark side of recruitment in crowdsourcing: ethics and transparency in micro-task marketplaces. *Computer Supported Cooperative Work: CSCW: An International Journal*, 32(3), 439–474. <https://doi.org/10.1007/s10606-023-09464-9>
- Yin, X., Chen, Y., & Li, B. (2017). Task assignment with guaranteed quality for crowdsourcing platforms. *In 2017 IEEE/ACM 25th International Symposium on Quality of Service (IWQOS)*, 1-10). IEEE.
- Zhen, Y., Khan, A., Nazir, S., Huiqi, Z., Alharbi, A., & Khan, S. (2021). Crowdsourcing usage, task assignment methods, and crowdsourcing platforms: A systematic literature review. *In Journal of Software: Evolution and Process*, 33(8). John Wiley and Sons Ltd. <https://doi.org/10.1002/smr.2368>