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EXPLORING THE EVOLUTION OF DIGITAL AND PLATFORM COMPETENCIES IN THE MODERN ECONOMY

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SUMMARY

Purpose: The growth in platform-based jobs has created a need to have competencies that go beyond traditional digital capabilities. The conceptualization of Gig Literacy 2.0 in this work is an adaptation of the DigComp 2.0 framework to the changing, platform-specific skills that freelancers and gig workers need to have in order to function in the algorithm-mediated labor markets. Methodology: The study's identification of Gig Literacy practices was based on a comprehensive literature review regarding digital competence, platform work, and freelancer skills. This informed the contextual adaptation of DigComp competencies for gig work. According to these results, a more specific Gig Literacy tool was created and distributed to freelancers and gig workers across various digital platforms (N = 257). Confirmatory Factor Analysis (CFA), construct validity, and reliability were assessed. Findings: The measurement model established high standards of fit (CMIN/DF = 1.43; GFI = 0.947; CFI = 0.985; TLI = 0.980; RMSEA = 0.041). Construct convergent validity was verified by Composite Reliability, which ranged between 0.87 and 0.91, and Average Variance Extracted (AVE), when all constructs showed an average value of over 0.69. The structural results indicated that demographic variables played a significant role in Gig Literacy practices ($p < .05$), especially in terms of the type of work and level of the intensity of skills. Conclusion: The results confirm that platform work necessitates multidimensional competencies beyond conventional digital literacy. The professionalized and competitive conditions of the freelancer environment demand highly developed strategic and evaluative platform skills that would help a freelancer to increase the rating of clients, win projects, and ensure a stable income. The research goes further to elaborate on digital competence theory by developing a proven Gig Literacy framework to fit the platform economy.

Key words: *gig literacies, gig worker, freelancer, digital literacy, digital labor platform, freelancers, algorithm management.*

INTRODUCTION

The evolution of gig work is from traditional, non-standard arrangements to the transformation of a highly significant modern workforce. Earlier forms of gig work, such as musicians, existed for over a century, but the rapid growth of digital platforms and platform-mediated work style has changed the nature of work [1]. This evolutionary shift has introduced newer work experience and modes of work

with technological advancements [2]. All Gig work has some kind of flexibility with project-based compensation and a temporary nature. These prominent characteristics distinguish them from other non-standard work arrangements. This form of short-term employment forms the gig economy as a privileged form of employment mediated by digital labor platforms like Upwork, Uber, Swiggy, and Fiverr. The role of the Digital labour platform acts as a mediator between the worker and the client, which shapes the platform relationship [25]. The Task of work on these kinds of platforms can range from simple to complex, low-skilled to high-skilled, from knowledge-intensive work to basic platform work [3]. These platforms perform managerial functions through the algorithms that act as an invisible manager and supervisor. This platformic management guides through assigning the task, evaluation and rating, communication and problem solving, resolving conflicts, and gatekeeping access to the platform [4].

The Gig workers consider themselves self-employed workers, independent contractors, or Freelancers, and are responsible for maintaining their own costs on insurance, overhead costs, or equipment maintenance [5]. The form of non-standard employment does not provide any financial security like provident and pension funds in traditional employment. Though this arrangement offers flexibility and freedom, it contributes to work precarity and autonomy conditions [6].

The role of digital labor platforms in the lives of Gig workers has created a complex landscape. Earlier literature has revealed that research in the gig economy has shown that there is a paradoxical relationship between autonomy and control and the well-being of platform workers [7][29], because algorithms exert control over workers, resulting in constrained autonomy leading to a negative contribution to worker well-being [8]. This algorithm control can lead to isolated work, low pay, non- standard working hours, and lack of sleep, leaving the workers disoriented. The mechanism of control in this platform-oriented work is non-transparent. This non-transparency of the work system leaves workers with psychological impacts [9].

Gig workers in digital platforms represent a significant shift in labor dynamics. To calibrate these labor dynamics, specialized competencies beyond digital skills are required. Success in this environment requires platform workers to develop sophisticated 'gig literacies' to manage their digital skills, reputation, navigate platform algorithms, and sustain their careers as independent professionals [6][30]. Currently, there are only a limited number of studies that discuss the literacy practices of Gig workers and how these literacy abilities develop and enhance the experiences of Gig workers with platform management. Therefore, this research intends to adapt and validate a tool for gig literacies derived from the Digital Competence Framework 2.0. These gig literacies aim to establish that the demographic characteristics of both groups of Freelancers and Gig workers are significantly affected.

The paper is structured as follows: Section 1 is the introduction to gig economy development and the demand for enhanced skills, and moves to a review in Section 2 of related literature on gig literacy. It is then preceded by the research methods used, data obtained, and statistics, with insights into influential demographic factors in Section 3. The result in Section 4 includes the statistical analysis of the methodology. This discussion in Section 5 is the interpretation of the results with an emphasis on the implications, and the conclusion points to the significance of gig literacy in making future suggestions in Section 6.

LITERATURE REVIEW

As work has been transformed through digital platforms, it has completely changed the way people acquire, do, and sustain their jobs. Gig literacy is used to refer to the skills and competencies required by workers to effectively work in platform-based as well as non-traditional working conditions. Gig literacy is the social and textual work practices that workers must engage in to be able to work in the gig economy, specifically on online labor platforms [5]. Online Freelancers and Gig workers should develop new literacies to operate and navigate platform systems, manage a professional identity, and address the precarity of the freelance working environment. Scholars from previous literature have addressed that operating in complex digital ecosystems that are far too different than the traditional employment environment is a requirement [6].

The digital labor platforms have developed a new working process through the distribution of tasks based on the automatic matching, rating, and reviewing mechanisms, remote freelancing, which transfers the process of competency development and responsibility to the digital labor force [6]. Not so much of a technological transformation, these changes are radically rearranging the basic market structure and relationships. The importance of Gig literacy is significant, which is demonstrated by its impact on having access to a job, economic stability, and freedom in the algorithmic labor market [10].

Precisely, the concept of creative literacy, named Gig literacy, should be adjusted by platform workers. Gig literacy refers to the core creative skills that are required to engage effectively in the gig economy, particularly on websites that facilitate digital labor, including complex skills to navigate platforms, manage professional identity, and avoid risks linked to freelance work, which then makes it possible to build a reputation, find work, and have a stable career in a digitalized world. These practices are vital in the whole life cycle of a gig. Such literacies include advanced digitization skills, such as learning the mechanics of platforms, managing online personalities, and performing an act of digital, social, and strategic communication [5] to secure a job and fulfill the position [6]. It requires workers not just to perform their main duties, but also to master their way in digital environments, to establish their online identity, and cope with the insecurities of freelance work.

Since digital labor platforms are growing and transforming the sphere of informal work, other categories and types of work are appearing, which leads to a decline in the level of joblessness [11]. The development of technological innovations has significantly enhanced the development on different platforms. There are many platform work types that are widely used at the global level. The functions of Gig workers and Freelancers will be highlighted in our research. Although both of them work in an online environment, the nature and character of their work are quite dissimilar. Typically, Gig workers get seen as working on on-demand, task-oriented jobs that do not demand many skills or any skills. Freelancers, on the contrary, are highly professional, skilled workers who have more advanced systems [8]. Earlier literature has widely acknowledged that these two types of work – online Freelancers and Gig workers not only differ in their demographic features but also in the factors that characterize their nature and the intricacy of their Gig literacy practices.

Information and Digital Content Literacy

Freelancers and Gig workers fall under the same umbrella term called the online platforms. Nonetheless, their navigational strategies and their literacy levels change with the type of tasks they have to perform and the extent of control they have. These practices can affect their visibility and revenue [2][12]. Knowledge of the platform navigation empowers the workers with a better understanding of the interface and enables them to use the interface effectively. Freelancers such as developers, writers, and designers have to maintain a credible portfolio. They must also learn about review and rating systems in the process of seeking tasks. The successful use of platforms is crucial to the work of Freelancers, as the achievements of this audience depend on the ability to understand the functioning of the algorithm, and thus help to optimize their reputation management and self-promotion strategies. Gig workers, in their turn, complete real-time and work-task related jobs such as ride-hailing drivers and food delivery staff [13], where the main concern is to be able to conform to the platform rules. According to existing research, in the case of Gig workers, literacy becomes practical because they have increased exposure to algorithmic control [14]. Therefore, they are faced with challenges of completing their employment without having the chance to be deactivated, which impacts their output rates. Considering these differences, the prior literature reveals that platform and navigation practices apply to both groups, as they enable workers to either resist or negotiate the algorithmic control that they are subjected to. Numerous freelancers operate in sectors such as graphic design, video editing, blogging, social media administration, and digital marketing, where the capacity to generate and oversee digital content is vital for attracting clientele and sustaining professional prominence. Another way in which gig workers are involved in digital content creation is different. As an example, ride-hailing and delivery workers are able to make online profiles, give testimonies about their work in worker forums, or even generate social media content about their job. The practices allow workers to share knowledge and create a set of approaches to follow platform rules and algorithms together [8]. Digital content creation also provides

personal branding, which helps freelancers and gig workers to establish credibility and visibility in platform-based labor markets.

The digital labor landscape where online Freelancers and Gig workers operate is closely intertwined with literacy activities such as information and data, communication and collaboration, digital content creation [15], problem-solving, and safety literacy practices aimed at achieving sustainable livelihoods through effective platform design, incentives, and work strategies. Prior scholarly research has demonstrated that these literacy activities enhance and assist Gig workers and Freelancers [3] in merging and evolving by showcasing distinct variations in job quality, stabilized income, and prospects for upward mobility among platform workers. These literacy activities not only develop individual competencies but also the interconnectedness of human integration with technological systems.

Communication and Collaboration Literacy

Communication and literacy practices vary for both Freelancers and gig employees. Freelancers who engage in mid-term to long-term agreements establish communication literacy practices, while interaction with clients for bidding systems, as an example, rating system pressures workers to respond quickly to messages from clients, which influences their communication literacy [16], negotiation of remuneration and project completion timelines, project proposals, portfolio development, and conflict resolution with platforms and clients. Conversely, Gig workers who work for location-based or micro tasking tasks tend to have shorter interactions characterized by transactional exchanges that are predominantly scripted with either customers or support systems. The aforementioned distinctions significantly shape collaboration, as Freelancers utilize collaborative tools like Slack, Hello, GitHub, etc., [17] to coordinate their work. In opposition, Gig workers usually adopt more individualized work techniques, which curtail collaboration and the ability to share expertise with peers.

Problem-Solving Literacy

Problem-solving practices are one of the essential elements for Gig workers and Freelancers. For Freelancers, it involves managing unforeseen circumstances such as client demands and tight deadlines, technical difficulties with platforms, and unresolved payment timelines. For all the aforementioned, Freelancers [18] often resort to online tools, software, and tutorials to analyze and facilitate the platform instructions on developing new skills and keeping abreast of professional requirements. Research from previous studies has shown that Freelancers who excel in problem-solving enjoy long-term career stability [19].

On the other hand, Gig workers encounter obscure algorithm governance with diminished clarity. These individuals face a distinct scenario when it involves troubleshooting. As a gig worker, he or she must manage unexpected urgent issues such as traffic application oversight and hazardous delivery locations [20]. Information is somewhat concealed within the platform, leading Gig workers to confront transparency challenges, such as task allocation by algorithms and fluctuations in earnings [21]. These uncertainties modify the gig worker's circumstances by downloading alternative applications for navigating traffic-free routes, tips based on customer evaluations, or securing assignments during peak hours. These represent the problem-solving competencies that emerge with informal knowledge sharing derived from hands-on experience.

Safety Literacy

Safety literacy practices are the most crucial literacy practices that develop with the experience of the workers. Freelancers – professional workers primarily operate on digital safety, such as signing agreements, maintaining a safety work file with their patents or intellectual property, and utilizing secure payment methods with currency channel solutions [22]. Experienced Freelancers opt for multi-factor authentication backup systems and data privacy measures. All these safety practices also enhance and foster an awareness of safety communication while handling client information with the highest level of security, which is also a significant aspect of this [23].

Gig employees are encountering numerous hazards to their safety. Workers tied to particular areas, such as delivery and ride-hailing employees, are exposed to hazards. When they confront physical danger, accidents, or unfriendly clients. When traveling overnight, female employees confront various difficulties. Scholars argue that the safety of online environments is under threat, as these spaces track and monitor details in both personal and professional domains. This escalating issue, termed platform transparency, acts as a barrier to self-protective behavior and induces constant stress [24].

An extensive review of these literacy methods suggests that the spheres of Gig literacy practices, encompassing information and data, content generation, communication and teamwork, problem-solving, and safety, are not independent; they are, in reality, interdependent [23]. As an illustration, a freelancer who speaks well can also solve the problems faster, since clients know more about what is required. Likewise, an online community worker who is a gig worker will enhance communication and problem-solving capabilities. To navigate this situation, it's important for Gig workers and Freelancers to gain collective knowledge when collaborating with platforms, enhancing their working experiences across these platforms. Through these interconnected literacy practices, platform workers can eliminate all obstacles caused by algorithmic control that may lead to a less transparent environment, an updated work portfolio, and job security and satisfaction, ultimately contributing to the well-being of the workers [8]. The capability of the worker's contribution through these literacy practices is entirely in line with platform design and structure. The workers introduce skills into the platform, and the platform also influences the use of the skills. Practice is also a very important factor in literacy development. In general, these studies indicate that increasing literacy related to information and data, content creation, communication and collaboration, problem-solving, and safety would enable Freelancers and Gig workers to succeed in the digital labor markets. Despite the number of studies that define skills and practices that are required, the number of psychometrically validated measures of gig-specific literacies is limited. The gap in this paper is filled by offering a theoretically based, empirically testable scale. Even though earlier literature has explored several literacy practices, they are deficient in empirical studies; consequently, this research intends to address this gap by employing a measurement tool tailored from the Digital Competency 2.0 framework.

RESEARCH METHODOLOGY

Research Hypotheses

The fast rate of expansion in digital labor platforms has led to the emergence of new forms of employment for two categories of workers, namely, Gig workers and Freelancers. These populations vary in the demographic features that were observed in the past literature. Such disparities usually affect how both groups are digitally literate in their respective careers. To support this emphasis, the paper takes the DigComp 2.0 framework. The paper presents the concept of DigComp 2.0 as the theoretical framework for comprehending the nature of Gig literacy among Freelancers and Gig workers (Figure 1). DigComp2.0 (25) provides the necessary digital competencies that are required to engage in the digital environment properly. These consist of information and data literacy, content creation, communication and collaboration, safety, and problem-solving. The spheres are quite similar to the daily needs of workers who rely on online platforms to find jobs, interact with customers, and handle online operations. Though the popularity of DigComp 2.0 in the educational field and overall workforce studies, it is not completely adjusted to the peculiarities of the gig economy, where constant interaction on the platform and the algorithmic regulation determine the digital behaviors of workers. The implementation of DigComp 2.0 in this sector can enable the research to conceptualize Gig literacy in an orderly manner and give a systematic framework to compare the levels of digital competence of Freelancers and Gig workers.

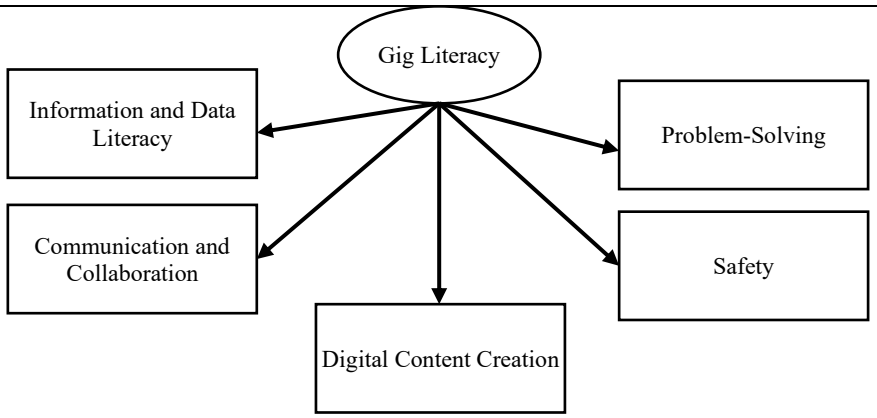

Figure 1. Conceptual model

The primary objective of this research is to fill the gap by developing and adapting a Gig literacy survey for Gig workers and Freelancers. To evaluate the influence of Gig literacy practices on their careers, and also to find which demographic attributes significantly influence these literacy practices. So, based on the study, the research hypothesis is stated as:

H0: Gig literacy practices do not significantly influence gig workers and freelancers.

H1: Gig literacy practices significantly influence Gig workers and Freelancers.

H2: The Demographic characteristics of Gig workers and Freelancers do not significantly influence gig literacy practices

H3: The Demographic characteristics of Gig workers and Freelancers are significantly influenced by Gig literacy practices

Data Collection and Analysis

The research modified and adapted Dig Comp 2.0 for the Gig literacy survey tool aimed at Gig workers and Freelancers. A survey instrument was deployed for distribution to Freelancers and Gig workers. The validity and reliability [26] of the survey tool were assessed utilizing CFA. The dependability of each framework was assessed utilizing the Cronbach αcoefficient ($\alpha > 0.70$), and the scale was scrutinized for both convergent and divergent validity. Following the completion of a pilot test, the second segment of the analysis focuses on determining whether the demographic characteristics influenced Gig literacy practices (Work type, Primary type of skill used for work, and Participation in work). This segment of the analysis was accomplished using one-way ANOVA, as the targeted population of this study consists of Gig workers and freelancers. A purposive sampling technique was employed, as they represent the intended demographic of the research. The survey was collected using internet surveys from digital labor platforms, freelance communities, and social media networks. Only participants fulfilling the parameters outlined above were accepted.

Scale Adaptation Process and Item Generation

The Gig literacy scale was adjusted based on the accepted practices and modification method proposed by [27] and is based on the principles of [28]. This retained the theory of the original framework but made it more applicable to the gig and freelance work. This particular survey instrument relies on the DigComp2.0 framework and considers digital competence as a multidimensional concept that encompasses the skills of communication, collaboration, problem-solving, and safety. Although DigComp 2.0 presents a general perspective of digital competence, earlier research demonstrates that its tools usually require further adaptation to particular areas or sectors, particularly those with platform mediation and independent work. Hence, in this work, DigComp items were modified to align with the conditions of the gig and freelance work. During this process, the original meaning and theoretical intent

of every item were maintained, so that continuity of the DigComp framework and the new Gig literacy scale could be ensured.

Item Generation

The adapted instrument was checked with the experts in the field of developing digital literacy and gig-economy research to ensure content validity. The specialists rated every item on the basis of its clarity, relevancy, and its ability to demonstrate DigComp-based competencies in platform-mediated work conditions. Their qualitative feedback resulted in slight changes in wording that made it easier to understand, especially the items concerning digital safety, privacy management, and problem-solving based on the platform. Such professional endorsement was based on the best-practice guidelines of scale adaptation [27]. The final adapted instrument of Gig literacy practices comprises 15 items across 5 dimensions, assessed utilizing a five-point Likert scale extending from 1 (To a great extent) to 5 (Not at all). The scale implements DigComp-based Gig literacy skills about communication and cooperation, problem resolution, and digital security within gig and freelance work settings. With these 15 items, demographic characteristics were also attached to check the influence of demographic characteristics on Gig literacy practices among Freelancers and Gig workers.

RESULTS

Table 1. Descriptive analysis of demographic characteristics

Demographic Variables	Frequency	%Age	Mean	Std.Deviation
AgeGroup				
20-29	102	40	2.11	1.109
30-39	68	26		
40-49	44	17		
50&above	43	17		
Gender				
Male	114	44	1.62	0.607
Female	126	49		
Prefer not to say	17	7		
WorkType				
Gig worker	135	53	1.47	0.500
Freelancer	122	47		
Education				
Post-Doc	7	3	3.63	1.111
Doctorate	27	11		
Post-Graduate	89	35		
Under-Graduate	76	30		
High School	47	18		
No Schooling	11	4		
Income				
Above 60000	53	21	2.85	1.286
40000-60000	47	18		
20000-40000	71	28		
10000-20000	58	23		
less than 10000	28	11		
Experience				
less than 1 year	55	21	2.73	1.260
1-2 years	56	22		
3-5 years	75	29		
5-10 years	45	18		
10 years & above	26	10		
Working Hours				
less than 10	30	12	3.11	1.202
Oct-20	51	20		
20-30	70	27		
30 -40	74	29		
More than 40	32	12		
SkillType				
low-skill	96	37	1.63	0.485
high skill	161	63		
Participation				
Full-time	132	51	1.49	0.501
Part-time	125	49		

The demographic analysis of the participants, table 1 (N = 257), reveals a broad and harmonized spectrum of platform workers. The majority of participants are youthful to middle-aged, with 66% under 40 years, signifying robust involvement of younger demographics in gig and freelance employment. Gender difference with 49% female and 44% male respondents is fairly equal. A significant comparison of work types is evenly allocated between Gig workers (53%) and Freelancers (47%). A considerable number of survey respondents display diverse educational backgrounds, having earned both their undergraduate and advanced degrees. Income levels fluctuate considerably, mirroring the income unpredictability of platform work. Most participants have 1–5 years of experience and work 20–40 hours per week, while high-skill professional roles and full-time participation slightly prevail in the sample.

Confirmatory Factor Analysis

The confirmatory factor analysis conducted on the suggested five-factor measurement model illustrated in figure 1 exhibits a high degree of correspondence with the empirical data, yielding favorable model fit indices that were analyzed utilizing AMOS.

Table 2. CFA fit indices

CMIN/DF	1.43
GFI	0.947
AGFI	0.921
NFI	0.952
TLI	0.980
CFI	0.985
RMSEA	0.041

In table 2, the relative chi-square (CMIN/DF = 1.43) is considerably smaller than the advised maximum of 3.0 and shows good parsimony of the model. With GFI at 0.947 and AGFI at 0.921, both absolute fit indices surpass the acceptable benchmark of 0.90, indicating the model's ability to reflect the observed covariance structure. The incremental fit indices also demonstrate a high model adequacy with indices of NFI (0.952), TLI (0.980), and CFI (0.985) exceeding the high standard of 0.95, showing a significant improvement over the null model. Notably, the RMSEA measuring 0.041 has significantly lower the cutoff value of 0.06, indicating good support for the model.

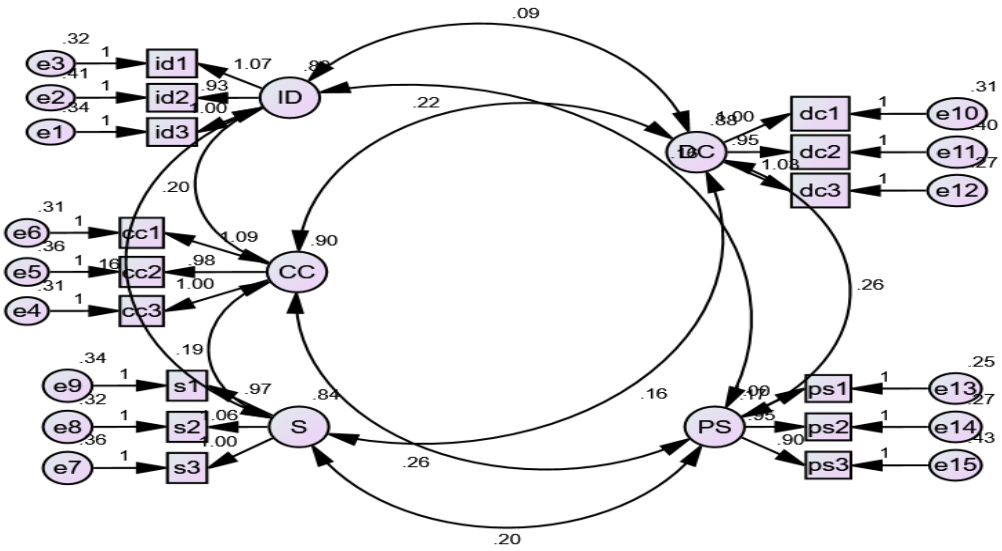

Figure 2: Measurement model

The figure 2 is an illustration of the measurement model designed to gauge Gig Literacy. The connections illustrated by the diagram are among different concepts, which include Information and Data Literacy (ID), Communication and Collaboration (CC), Safety Literacy (S), Problem-Solving (PS),

and Digital Content Creation (DC). Each connection is shown by an arrow, while the coefficient indicates the level of influence one variable has on another. Numbers provided along the paths (such as 0.90, 0.97) represent the level of factor loading and degree of association between variables. The connections in the diagram were confirmed with Confirmatory Factor Analysis (CFA), which showed that the model had very high fitness based on indices, such as CMIN/DF = 1.43, GFI = 0.947, CFI = 0.985, and RMSEA = 0.041.

Reliability, convergent validity, and discriminant validity

Table 3. Cronbach α, AVE, and CR

	α	CR	AVE
DC	.888	0.888	0.725
ID	.873	0.874	0.699
CC	.895	0.895	0.740
S	.882	0.883	0.715
PS	.909	0.910	0.771

The findings in table 3 indicate high internal consistency reliability and sufficient convergent validity of all five constructs (DC, ID, CC, S, and PS). The alpha (α) values, between 0.873 and 0.909, are above the recommended value of 0.70, which points to the high internal consistency of the items in the measurements of each of the constructs. In the same side, the Composite Reliability (CR) values lie between 0.874 and 0.910 also affirming the reliability of the latent constructs and indicating that the indicators are always reflecting their underlying factors. The value of convergent validity is supported by the values of the Average Variance Extracted (AVE) higher than 0.699 to 0.771 and all more than the accepted cutoff of 0.50. It means that both constructs explain over 50 % of the variance of their indicators. PS has the highest convergent validity (AVE = 0.771) and also, ID has a reasonable convergent validity (AVE = 0.699). In general, the results indicate that the measurement model has a high level of reliability and fair convergent validity, which means that the use of the constructs in further structural analysis can be accepted. Through table 4 Discriminant validity was assessed through the correlations among factors, suggesting that each construct is distinct from the others. The squared correlation coefficients were discovered to be lower than the square root of the AVE of their respective factors, as illustrated in table 5. As a result, confirmed discriminant validity for the scale. The findings support the scale's validity. The CFA outcomes affirm that the designed five-factor model is theoretically acceptable and significant with hypothesis testing and structural modelling.

Table 4. Descriptive statistics, correlations and square root of AVEs

DC	ID	CC	S	PS
0.852				
0.105	**0.836**			
0.252	0.229	**0.860**		
0.192	0.192	0.216	**0.846**	
0.255	0.164	0.257	0.200	**0.878**

Independent-samples t-tests and one-way analyses of variance (ANOVA) were used to test the influence of demographic factors on Gig literacy practices factors according to the work type, skill intensity, work engagement, and the age group using SPSS. Table 5 presents descriptive statistics and the result of the test, revealing that Hypothesis 2 has been proved, stating that demographic factor influences Gig literacy practices.

The information and data literacy were found to vary significant in demographic variables such as work type, skill intensity, and work engagement. The Freelancers were also found to have much higher levels compared to the Gig workers ($t = 77.43$, $p < .001$). Also, Freelancers and high-skilled workers represent the same category as they are involved in higher cognitive work, and were also rated highly compared to the low-skilled workers, who also represent on-demand workers called Gig workers. ($t = 25.04$, $p < .001$). Moreover, full-time workers were much more information and data-literate than part-time workers ($t = 17.87$, $p < .001$). The communication and collaboration literacy among ages varied

significantly (F = 4.49, p =.004). Another notable difference was based on the nature of the work, with the Freelancers registering higher than the Gig workers (t = 181.28, p <.001). The high-skill workers (Freelancers) performed better than the low-skill workers (Gig workers) (t = 72.77, p <.001), and full-time workers scored significantly higher than the part-time workers (t = 7.84, p =.006). There was a significant difference in work type, skill type, and participation status (all p <.001). Freelancers showed a large difference in digital content creation literacy as compared to Gig workers (t = 326.64).

Table 5. Mean, standard deviation, T-Test, & anova results on the difference in demographic and gig literacy practices

Demographic variables	Categories	N	Mean	SD	t-value/ f-value	Sig.
Information and data literacy						
Work type	Gig worker	135	3.4790	.47771	77.426	.000
	Freelancer	122	3.9973	.46453		
Skill Intensity	Low-skill	96	3.5174	.48575	25.044	.000
	High-skill	161	3.8489	.52961		
Work Engagement	Full-Time	132	3.8586	.48580	17.874	.000
	Part-Time	125	3.5840	.55464		
Communication &Collaboration Literacy						
Age Group	20-29	102	3.7516	.61102	4.488	.004
	30-39	68	3.4363	.67962		
	40-49	44	3.7652	.53110		
	50& above	43	3.5504	.60807		
Work type	Gig worker	135	3.2519	.49620	181.284	.000
	Freelancer	122	4.0628	.46618		
Skill Intensity	Low-skill	96	3.2535	.51355	72.773	.000
	High-skill	161	3.8654	.58020		
Work Engagement	Full-Time	132	3.7424	.64282	7.840	.006
	Part-Time	125	3.5253	.59758		
Digital Content Creation Literacy						
Work type	Gig worker	135	3.0840	.45842	326.639	.000
	Freelancer	122	4.1366	.47481		
Skill Intensity	Low-skill	96	3.0486	.47874	135.462	.000
	High-skill	161	3.9027	.61649		
Work Engagement	Full-Time	132	3.7576	.70270	17.703	.000
	Part-Time	125	3.4000	.65719		
Safety Literacy						
Work type	Gig worker	135	3.9580	.44690	50.182	.000
	Freelancer	122	3.5137	.48702		
Skill Intensity	Low-skill	96	3.9653	.43118	30.589	.000
	High-skill	161	3.6170	.51936		
Problem-solving Literacy						
Work type	Gig worker	135	3.5531	.45194	68.718	.000
	Freelancer	122	4.0410	.49158		
Skill Intensity	Low-skill	96	3.5417	.44656	36.744	.000
	High-skill	161	3.9296	.52362		
Work Engagement	Full-Time	132	3.8535	.52140	4.647	.032
	Part-Time	125	3.7120	.53102		

Note: M – Mean, SD- Standard Deviation p<.05, p<.01

On the same note, the high-skilled workers (Freelancers) scored much higher than the low-skilled workers (Freelancers) (t = 135.46). More digital content creation literacy levels were also reported among the full-time workers as compared to part-time workers (t = 17.70, p < .001). Work type and skill type were significant differences in safety literacy (both p <.001). Gig workers had much greater safety

literacy than Freelancers (t = 50.18), and low-skill workers for instance a food delivery worker should adapt digital mapping tools in order to ensure his safety in work, scored more than high-skill workers (t = 30.59) Literacy in problem solving varied greatly across the work type and skill type. The Freelancers rated better than the Gig workers (t = 68.72, p <.001) and the high-skill workers rated better than the low-skill workers (t = 36.74, p <.001). There was also a considerable difference in terms of work engagement status whereby the full-time workers had a greater problem-solving literacy than the part-time workers (t = 4.65, p = .032).

The findings have shown that there are significant differences in Information and Data Literacy, Communication and Collaboration, Digital Content Creation and Problem-Solving literacy with Freelancers having higher scores. On the other hand, Gig workers presented much greater safety literacy. These results imply different Gig literacy profile of Freelancers and Gig workers.

DISCUSSION

This paper has shown that Gig literacy practices vary greatly between Freelancers and Gig workers, and that the difference between the two is influenced in a systematic manner by work type, intensity of skills, and engagement with work. These findings will support previous studies that indicate that digital and platform-specific literacies do not appear evenly among the population of Gig workers but are determined by structural and occupational factors that are peculiar to one or another type of gig work [4].

Based on the findings presented in this paper, it is clear that hypothesis (H1) has been confirmed, which stated: "Gig literacy practices significantly affect gig workers and freelancers." From the statistical analysis carried out, it can be noted that freelancers are better at information literacy, content creation, and problem-solving compared to gig workers who, conversely, are better with safety literacy. It can be seen that demographics, work type, skill level, and engagement have an important impact on gig literacy levels, especially among freelancers and highly skilled gig workers.

Freelancers were characterized by better Gig literacy in all the areas of platforms, information evaluation, platform navigation, communication and collaboration, problem-solving, and digital safety. One can explain this trend by the fact that such freelance activities presuppose active seeking of the clients, assessment of the job offers, contract negotiation, reputation maintenance, and long-term relationships with the clients. These practices require the constant interaction with platform interfaces and digital tools, which consolidate advanced practices of Gig literacy. In comparison, gig workers in task-based or place-based platforms tend to work in systems that run algorithmically and have less autonomy and lower chances to acquire digital competencies that are higher-order.

Another factor that was found to have a great impact on the Gig literacy practices was the skill intensity. High-skill workers indicated experiencing significantly higher levels of Gig literacy than low-skill workers, especially in information literacy, problem-solving, and safety practices. It is consistent with the available data that positions in high-skilled gig work, including design, programming, consulting, and professional services, require analytical judgment, client verification, and strategic platform application. In comparison, low-skill Gig workers are less apt to develop literacy that goes beyond the ability to operate familiarized workflows and platform instructions [8].

The level of work engagement (part-time versus full-time participation) also was an important factor in the Gig literacy practices. Full-time Freelancers and Gig workers were also found to be more literate than part-time, which implies that platform interaction frequency and experience learning are important in the development of literacy. The constant exposure to platform policy, algorithmic shifts, communication with clients, and dispute resolution procedures helps workers to perfect their digital strategies with time. Part- time workers, although they have an advantage in flexibility, might not get enough engagement to acquire high-order Gig literacy skills.

Notably, the results show that Gig literacy is an intermediate ability via which demographic and work-related variables affect work results. Although demographic factors, including type of work, level of skill intensity and level of engagement, determine access to literacy-building opportunities, the structural

disadvantages can be countered by strong Gig literacy. This is in line with previous studies that highlight the importance of digital skills as a type of human capital increasing adaptability and resilience in non-standard working environments [23].

Implication

Theoretically, the inquiry advances contemporary paradigms of digital competence by anchoring them in platform-centric professional environments. The manuscript modifies the DigComp 2.0 framework, rendering it a contribution to the scholarly discourse as the inquiry explicitly introduces the notion of Gig Literacy as an innovative and measurable construct that possesses the capacity to encapsulate platform-specific competencies. Practically, the findings of the investigation would be illuminating to diverse stakeholders. In the context of freelancers and gig laborers, the investigation articulates the necessity to invest in strategic competencies, including effective bidding, profile enhancement, and awareness of the algorithm to augment visibility and income potential. These insights can be used by the digital platform to develop training modules, onboarding, and user interfaces that facilitate the development of skills and enhance the performance of workers. Moreover, educational institutions and training organizations should incorporate Gig Literacy into their syllabi to assist in equipping individuals for careers on platforms. From a policy perspective, the results suggest that targeted upskilling services and digital inclusion initiatives are imperative to empower platform skills among gig workers. The synergy established among governments and labor factions is essential in boosting skill training endeavors that facilitate the viability and financial sustainability of gig work.

Limitation

This study has a number of limitations even though there are contributions that it has come up with. To begin with, the cross-sectional research design restricts the possibilities to reveal the changes in Gig Literacy over time, which means that longitudinal studies should be conducted. Second, the sample is confined to a particular category of freelancers and gig employees, which can make the extrapolation of the results to other geographical and platform settings more challenging Furthermore, although the research has been based on the essential dimensions of Gig Literacy, it was not able to exhaust other emerging skills, especially those associated with work with AI and changing platform algorithms. These constraints can be tackled in subsequent studies to enhance the effectiveness and usability of the Gig Literacy framework in explaining the nature of changing work in the platform economy.

CONCLUSION

Gig literacy is what distinguishes the two groups from each other; the nature of work, skill, and engagement play a critical role in this regard. Freelancers and high-skilled individuals have better literacy because of their autonomous nature and complex tasks. In contrast, gig workers are bound by certain structural constraints.

The research results have confirmed the critical impact of gig literacy on the careers of freelancers and gig workers. Through statistical analysis, it was found out that the practice of gig literacy plays a significant role in the career success and stability of the platform workers, depending on the job type, skill level, and engagement in gig work. More precisely, the participants who were freelancers and high-skilled workers performed better in such areas as information literacy, problem-solving and digital content creation literacy. For example, in the information literacy area, the t-value was 77.43 ($p < .001$). On the other hand, gig workers were more engaged in safety literacy since their job required working in an unsafe environment ($t = 50.18$, $p < .001$). The importance of Gig Literacy for the success of platform workers is underscored in this study, taking into account the strategic nature of Gig Literacy and its general aspects. Gig workers specifically need to retain their high level of literacy given the intense competition for bids and maintenance of reputation. Further research could focus on measuring the development of Gig Literacy, using AI techniques, and comparing different kinds of platforms. The implications from this study imply policies that will aid in upskilling gig workers for sustainable livelihoods.

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