

Motivation and Bidding Intention on Crowdsourcing Platforms: A Study of Malaysian Digital Workers

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DOI: <https://dx.doi.org/10.47772/IJRISS.2025.914MG001>

Received: 17 December 2024; Accepted: 27 December 2024; Published: 29 January 2025

ABSTRACT

Crowdsourcing has been identified as an emerging industry that can serve as a platform to generate additional income and allow businesses to conduct their operations more innovatively. To ensure the platform's success, the crowdsourcing system heavily relies on the bidding intention of the crowd's participation. As a result, it is critical to understand the reasons behind digital workers' crowdsourcing bid intentions. Nevertheless, much research has been conducted on the motivational factors that influence bid intention in crowdsourcing, either intrinsic or extrinsic factors. Regrettably, past research typically isolates intrinsic and extrinsic motivational factors to determine which factors are more significant and impact participation in crowdsourcing. Therefore, this paper aims to provide insight into the relationship's significance between intrinsic and extrinsic motivational factors. As a result, this paper explains motivational synergy using the stimulus-organisation-response (S-O-R) model. The stimulus-organisation-response (S-O-R) model explains how hedonic pleasure, an intrinsic motivation, affects external motivations (like money and the game-like aspect) and the intention to bid in crowdsourcing. This model explains how the relationship between internal and external motivations can be combined to have the best influence on bidding intention. The model was tested using partial least squares structural equation modeling (PLS-SEM) analysis by taking an online survey from 129 digital workers who participated in eRezeki, LinkedIn, and Freelancer.com. As hypothesised, hedonic pleasure mediates the relationship between monetary reward and gamification elements with bidding intention, which is significant. Furthermore, monetary reward and gamification elements were found to have a non-significant direct relationship with bid intention. Therefore, this result proves that the synergy between internal and external motivations is important in influencing bid intentions in crowdsourcing.

Keywords: Bidding Intention, Monetary Reward, Gamification elements, Hedonic Pleasure, Crowdsourcing

INTRODUCTION

Crowdsourcing in Malaysia is one of the digital economy's pillars, contributing 22.6% of the Malaysian GDP in 2020. This sector also contributes 7.7% of total employment in Malaysia [6]. Malaysian Digital Economy (MDEC) is the governing body that controls and initiates programs to sustain Malaysian crowdsourcing activity. It was established in 1996 as the lead agency to implement the MSC Malaysia initiative. Recently, MDEC conducted two eRezeki Global Online Workforce (GLOW) programs to help Malaysian people get jobs and generate income through a crowdsourcing platform. eRezeki allows users, especially those from low-income backgrounds, to earn money by completing digital tasks for businesses through an online crowdsourcing platform [13]. In eRezeki, people's abilities are evaluated, and their digital job is assigned accordingly. By 2020, this platform would have generated RM1.3 billion in income and attracted 700,000 participants in Malaysia.

The term "crowdsourcing" refers to a method of organizing labor in which businesses assign tasks to a large group of people, typically those with access to the Internet, and pay anyone in the "crowd" who completes the assignment. Companies have used crowdsourcing by advertising job openings on their websites. Crowdsourcing activity may occur in 2 models: the contact hiring and contest models. A contract hiring model is where a job requester directly hires a digital worker based on their online profiling to complete the project [1]. According to [13] Crowdsourcing is a concept that consists of 3 key components that were:

- I. Job provider.
- II. Platform (Web platform that acts as a third party to allow the job providers to access the crowd.
- III. Digital work

An online crowdsourcing platform is a Web-based exchange that is mediated by the platform's owners, who also serve as site administrators. Through the platform, job providers can search for potential digital workers to solve their problems and carry out their tasks. The crowd workers will then accept the remunerated tasks, complete them, and return them to the job provider for evaluation [5]. While working procedures and compensation structures vary across platforms, the job provider gains employment opportunities to solve their problem; meanwhile, online crowdsourcing platforms retain a portion of payments between clients and freelancers as a service fee. There were plenty of crowdsourcing platforms where the digital worker could engage, such as Freelancer, Upwork, People Per Hour, and Experfy. The emergence of crowdsourcing as an online platform provides a virtual space for organizations to expand their capabilities and business segments [20].

The rise of crowdsourcing began in 2016 when Malaysia implemented its 11th plan, which emphasized producing high-quality digital talent in the country [18]. Nevertheless, research on factors influencing bidding intentions on crowdsourcing platforms still needs to be explored. To date, previous studies have primarily proposed conceptual research on motivation theory and the factors that influence digital worker participation. However, there has been a lack of empirical analysis and hypotheses regarding the motivational factors that influence digital workers' bidding intentions [20;18]. Furthermore, prior research only analyses and gives a point of view on which motivational factors have more influence on decision-making, either intrinsic or extrinsic, that create a gap toward motivational synergy and alliance in influencing bidding intention. Therefore, there is a need for theoretically driven empirical research that investigates the motivational synergy between intrinsic and extrinsic factors that could give a new point of view on decision-making in crowdsourcing.

Additionally, this paper proposed to adopt the Stimulus-Organism-Response (S-O-R) model that explains the power of the intrinsic mediating role that connects extrinsic motivations and bidding intention on crowdsourcing. Therefore, this paper also aims to explore intrinsic motivation as a mediating role that could indirect connection between external motivations and bidding intentions. Thus, the implementation of this model could give a wide view of intrinsic and extrinsic motivation alliances in crowdsourcing bidding intentions.

Motivated by these knowledge gaps, this paper aims to answer the following research questions: (1) What is the relationship between external motivation (monetary reward and gamification elements) toward bidding intentions in crowdsourcing platforms? (2) What is the relationship between internal motivation (hedonic pleasure) toward bidding intentions in the crowdsourcing platforms and (3) Does internal motivation (hedonic pleasure) mediate the external motivation (monetary reward and gamification elements) with bidding intentions in the crowdsourcing platforms? The model is tested with survey and archival data from 169 digital workers on a crowdsourcing platform and is found to be largely supported. This paper contributes to the crowdsourcing literature by examining the effect of extrinsic and intrinsic motivation factors on the decision-making behaviour of digital workers in crowdsourcing. It also provides insights into how the SOR model combines extrinsic and intrinsic motivations to create a synergistic force that significantly influences bidding intentions in crowdsourcing.

LITERATURE REVIEW

Bidding Intention

The general term "bidding intention" refers to digital workers in the bidding process, including the decision of whether to place a bid. The relationship between intention and behaviour assumes that human beings attempt to make rational decisions based on the information available to them. Thus, a person's behavioural intention to perform (or not to perform) behaviour is the immediate determinant of that person's actual behaviour. Thus, the more a person intends to carry out the intended behaviour, the more likely they are to do so. In crowdsourcing, "bidding intention" refers to the process by which digital workers submit bids to job providers to secure a project.

The first phase of bidding intention is intelligence. At this stage, recognition is the crucial role that represents intelligence. Recognition explains identifying any information needed to decide. It includes recognising the problem and gaining the information required to solve it [3]. Next, the second phase is design. Design is the process of outlining potential solutions to a problem. The objective of alternative solutions is to tackle the same problem. Each alternative solution is evaluated following the collection of solution-specific data. Based on a set of essential criteria, the evaluation determines each solution's positive and negative consequences. Therefore, a conceptual model and plan will be conducted to measure the result. At this stage, solutions are merely outlines of real solutions and are intended solely for suitability analysis [7].

Then, choice, or favouring one feasible option over another, is a decision to set something free for execution. During the choice phase, the decision maker assesses the many options and chooses the one that most effectively satisfies the decision criteria. The choice is made after decision-makers gather all the valuable information needed to decide [5]. Finally, the last stage is implementation, which is acting based on the reason for all the information acquired. Implementation is an action taken based on reasoning, evaluating several options, and making choices based on specific criteria (Cerejo & Carvalhais, 2020).

Monetary Reward

In crowdsourcing, one of the most common methods to motivate digital workers is by offering monetary rewards, as money naturally incentivizes people to take action. Monetary rewards encourage digital worker participation and drive them to deliver high-quality, promptly completed work (Feyisetan & Simperl, 2019). Increasing the amount of monetary reward leads to a perception of high economic gain among digital workers, making them more likely to submit their solutions. Consequently, higher rewards can attract more contributors to bid on crowdsourcing platforms [9]. The presence of rewards influences the cognitive and neural mechanisms that drive their behaviour and decision-making [25].

Several studies have found that monetary rewards significantly influence bidding intentions in crowdsourcing [9]. [21] supports this by stating that the presence of monetary rewards motivates digital workers to participate in crowdsourcing. They also noted that higher monetary rewards increase the number of participants on crowdsourcing platforms. In contrast, several researchers have found that monetary rewards have no significant relationship with bidding intentions in crowdsourcing. [24] reported that monetary rewards do not significantly impact bidding decisions and do not contribute to the success of crowdsourcing projects. This finding is supported by [17], who stated that monetary rewards do not influence digital workers' intentions to participate and bid on crowdsourcing jobs. Furthermore, they failed to find evidence of a relationship between monetary rewards and digital workers' motivation to bid on crowdsourcing platforms. Therefore, there are inconsistencies in previous research regarding the influence of monetary rewards on bidding intentions in crowdsourcing.

H1. Monetary reward has a significant relationship with bidding intention in the crowdsourcing platform.

Gamification Element

Gamification elements refer to incorporating games or game-like features into various activities to encourage participation. Gamification involves using these game elements to motivate greater engagement in a particular

project [4]. Gamification elements are designed to pique the interest and motivation of digital workers to bid on crowdsourcing projects [8]. The main goal of gamification is to engage digital workers and provide them with a positive experience. This is achieved by incorporating game-like features into various user interfaces, which influence digital workers' psychology and behaviour in making bidding decisions. Crowdsourcing platforms have been gamified by adding elements such as points, feedback, badges, leaderboards, and social networks [22].

Previous researchers have identified a positive relationship between gamification and bidding decisions in crowdsourcing. [24] indicated that gamification elements such as badges, points, and avatars stimulate digital workers' inclination to bid on jobs because these elements assist them in assessing the trustworthiness of job providers on the crowdsourcing platform. Furthermore, [8] discovered a significant relationship between gamification and crowdsourcing bidding decisions in their research. Gamification artifacts such as feedback and points were identified as crucial factors influencing bidding decisions in crowdsourcing because digital workers use these elements to evaluate the capability of job providers' previous crowdsourcing projects. Nevertheless, [11] stated that gamification elements did not exhibit a significant relationship with crowdsourcing participation. Specifically, the research revealed that there was no notable correlation between gamification elements and crowdsourcing participation., Thus this paper will also explore the truth of gamification elements relationship with bidding intention in crowdsourcing elements.

H2: Gamification elements have a significant relationship with bidding intention in the crowdsourcing platform.

Hedonic Pleasure

Hedonic pleasures are intrinsic motivation factors that arise from basic human behaviour [19]. According to the hedonistic viewpoint, hedonic pleasures are defined as pleasure, comfort, and satisfaction, which are often fleeting and typically associated with consumerism [14]. In crowdsourcing, hedonic pleasure refers to the pleasure and happiness derived from participating in a crowdsourcing project [23]. It encompasses the happiness, enjoyment, and sense of achievement that digital workers experience when joining a crowdsourcing community [10].

Past researchers found that the hedonic reward factor, enjoyment, influences digital workers' crowdsourcing participation. According to research conducted by [17] hedonic value has a positive relationship with digital workers bidding decision to participate in the crowdsourcing platform. Furthermore, this research is also supported by [23] by explaining that hedonic rewards are one of the intrinsic motivations that have a significant relationship with digital worker bidding decisions in crowdsourcing.

In addition, past researchers also found Hedonic pleasures mediating roles that connect the external factors and bidding intentions in crowdsourcing platforms. Past research such as [2] stated that hedonic pleasures mediate the relationship between monetary rewards and the intention to bid on and participate in crowdsourcing. Hedonic pleasures provide a feeling of enjoyment and pleasure that is stimulated by monetary rewards from participating in crowdsourcing platforms [15].

Furthermore, according to [8] stated that Gamification elements such as points, meet a person's hedonic desire for pleasure and satisfaction. Furthermore, higher hedonic perceptions (e.g., pleasure, enjoyment, fun) can be achieved with the gamification leveling system across different domains worldwide. For example, it is indicated that people tend to compare themselves with others in terms of achievement, level, and scores, which challenges them to outperform their peers. Additionally, when individuals achieve their targeted goals, it further fulfills their pleasure and sense of fun [15].

Thus, it can be concluded that Hedonic pleasure has a significant relationship with bidding intention and acts as a mediating role between external factors such as monetary reward and gamification elements with bidding intention in crowdsourcing platforms.

H3: Hedonic pleasure has a significant relationship with bidding intention in the crowdsourcing platform.

H4: Hedonic pleasure mediates' the relationship between monetary rewards and bidding intention in crowdsourcing platforms.

H5: Hedonic pleasure mediates' the relationship between gamification elements and bidding intention in crowdsourcing platforms.

Herzberg's Two-Factor Theory (1968)

Bidding intention is influenced by digital workers' intrinsic and extrinsic motivational factors [7]. According to Herzberg's Two-Factor Theory (1968), developed by psychologist Frederick Herzberg, human intentions to take specific actions are driven by intrinsic and extrinsic factors. Herzberg explained that these factors have a non-simultaneous relationship: intrinsic factors increase motivation when present, while extrinsic factors decrease motivation when absent.

Intrinsic factors act as internal forces that drive a person to take action or make certain decisions. These factors include psychological elements such as knowledge, trust, experience, and hedonic pleasure. For digital workers, intrinsic factors are motivated by the intention to gain internal rewards like enjoyment and satisfaction [16].

Extrinsic factors are social, financial, or other external variables that can influence a person's decision. These factors incite reward-driven behavior, particularly in terms of monetary rewards. In the context of gamification, extrinsic motivation is associated with game elements such as points and badges. Extrinsic motivation occurs when digital workers are incentivized to engage in certain behaviors or activities to obtain a reward or avoid punishment [17].

Combining intrinsic and extrinsic factors can lead to optimal decision-making by leveraging the strengths of both types of motivation. In addition, the synergy of intrinsic motivation (internal drive and enjoyment) with extrinsic motivation (external rewards and incentives) enables individuals to achieve a balanced approach to decision-making. This balance allows them to consider both personal satisfaction and external benefits when making choices [21]. Hence, the synergy between intrinsic and extrinsic motivations can create a powerful motivational force that propels individuals towards their goals. By harnessing the strengths of both types of motivation, individuals can optimize their decision-making processes and achieve desired outcomes [7].

Stimulus-Organism-Response (SOR) model

The Stimulus-Organism-Response (S-O-R) model, originally introduced by Mehrabian and Russell in 1974, was derived from the Stimulus-Response (S-R) theory proposed by Shao in 1921. This model suggests a framework in which there is an external and environmental trigger (stimulus) the internal responses (cognition and emotion of people) and the response (behavioural outcomes). In this context, Gamification elements (extrinsic factor) can create hedonic pleasures (intrinsic factor) which in turn affect intentions to bid on a job in crowdsourcing platforms (behavioural response) [26].

Furthermore, this model also emphasizes the implementation of the mediating role of intrinsic factors. This model emphasizes the role of mediation in understanding the relationship between stimuli, internal responses, and behavioural responses. Mediation analysis plays a crucial role in enhancing the predictive power of the SOR model and advancing theoretical understanding [10]. Thus, this model consists of synergy interaction between intrinsic and extrinsic factors that influence digital worker behaviour.

The S-O-R model has been widely used and proven to be suitable for investigating and understanding the reasons behind a person's behaviour or reaction. This model was used to understand the relationship between independent variables (IV), dependent variables (DV), and the mediating role of intrinsic motivation. Specifically, this S-O-R model was applied in the context of decision-making on crowdsourcing platforms.

METHODOLOGY

Research Setting and Data Collection

Purposive sampling technique was used in this study. The data collected was limited to digital workers registered in Malaysia. The data collection was conducted using an online survey to examine the proposed research hypotheses and address the objective empirically. This research set a minimum sample size of 169 samples by using Gpower analysis to select a minimum sample size. The minimum sample size is determined by the power analysis, which considers the component of a model with the most significant number of predictors. It computes the minimal required sample size based on power, effect size, and significance level calculations [12]. In particular, the digital worker chosen as the sample population is registered based in Malaysia from e-Rezeki, LinkedIn, and freelancer.com.

Measurement Instruments

The measurements for the constructs were adapted from the existing literature as presented in Table 1. All the questionnaires that have been adopted were chosen based on a reflective measurement model that ensures internal consistency, reliability, and convergent validity. Internal consistency was measured using Cronbach's alpha and composite reliability, while convergent validity was assessed by measuring the average variance extracted (AVE [11]. Five-point Likert scale was used to design the instrument, ranging from 1 (strongly disagree) to 5 (strongly agree). The scales for all the variables were adopted from previous research and can be seen in Table 1 below. All the item loadings of each construct have exceeded 0.7, the Cronbach's alpha for each construct is above 0.7, and the composite reliability is greater than the benchmark of 0.7, indicating good internal consistency and reliability of the items.

Table 1: Instruments developments. Source: [17; 25; 8; 23; 2; 3]

Construct	Items	Sources
Monetary Reward	MR1	Digital workers would like to get the monetary rewards for participating in the tasks on the crowdsourcing platform.
	MR2	The crowdsourcing platform provides job opportunity for digital workers.
	MR3	Digital workers will be financially rewarded by job providers for their submissions on crowdsourcing platforms.
	MR4	Digital workers are intensely aware of their income goals for participating in crowdsourcing contests.
	MR5	Digital workers are keenly aware of the possible career promotion they gain from participation in crowdsourcing platforms.
Gamification Elements	GE1	Crowdsourcing platforms increase digital workers' points when they win and submit a job bid in crowdsourcing platforms.
	GE2	Point is a critical measure of the competence level of digital workers in crowdsourcing platforms.
	GE3	
	GE4	Feedback features in the crowdsourcing platform enable the job provider to review digital worker submissions.
	GE5	Feedback features in crowdsourcing platform allows the job provider to gauge the quality of digital worker submission (i.e., good, normal, or bad).
		The social network on the crowdsourcing platform enables digital workers to

	GE6	communicate with job providers effectively.
	GE7	The social network in crowdsourcing platform enables a digital worker to see the activities of other users. The social network of the crowdsourcing platform allows digital workers to communicate with crowdsourcing firms promptly.
Hedonic Pleasure	HP1	Digital workers enjoy solving tasks proposed on crowdsourcing platforms.
	HP2	The challenge of solving novel tasks proposed on crowdsourcing platforms is enjoyable for digital workers.
	HP3	Digital workers feel good when solving tasks on crowdsourcing platforms.
	HP4	Digital workers enjoy taking up tasks on crowdsourcing platforms.
	HP5	Digital workers feel participation in the crowdsourcing platform gives a pleasant feeling.
	HP6	Digital workers expect to enjoy solving problems and generating new ideas in the crowdsourcing platform.
Bidding Intention	BI1	Digital workers plan to actively join in the crowdsourcing tasks on the platform.
	BI2	Digital workers plan to actively join in the tasks on the crowdsourcing platform in the future.
	BI3	Digital workers will do their best to participate in tasks in the platform, rather than leaving it.
	BI4	Digital workers will keep a relatively high level of participation in the crowdsourcing platform.
	BI5	Digital workers plan to complete tasks on crowdsourcing platforms at an even higher participation level in the future.
	BI6	Digital workers will keep a relatively high level of participation in the crowdsourcing platform.

Structural Equation Modelling Analysis

Partial Least Squares Structural Equation Modelling (PLS-SEM) technique was conducted to assess the hypotheses using SmartPLS Version 4.0. The technique determines the parameters of a set of structural equations by combining principal component analysis with regression-based path analysis [11]. Procedures and precautions were implemented to ensure the smooth and effective execution of this technique, following the recommendations outlined by [12].

RESULTS

Measurement validation

The measurement model was examined to assess the reliability, convergent validity, and discriminant validity of the constructs. Based on Table 2, all the item loadings of each construct have exceeded 0.7, the Cronbach's alpha for each construct is above 0.7, and the composite reliability is greater than the benchmark of 0.7,

indicating good internal consistency and reliability of the items [11]. Additionally, the average variance extracted (AVE) from each construct is higher than 0.5, demonstrating adequate convergent validity of our measurement model [12]. Discriminant validity was evaluated by testing the Heterotrait-Monotrait Ratio (HTMT). As described in Table 3, HTMT values are less than 0.85, suggesting an adequate degree of discriminant validity for the measurement model. All the HTMT values are below the threshold of 0.85, indicating good discriminant validity of the constructs [12]

Table 2: Measurement Instrument. Source: (Authors).

Construct	Items	Reliability Measurement	Validity Measurement
Monetary Reward	MR1 MR2 MR3 MR4 MR5	Cronbach alpha, $\alpha = 0.883$ Composite reliability = 0.914	Convergent validity, AVE = 0.681
Gamification Elements	GE1 GE2 GE3 GE4 GE5 GE6 GE7	Cronbach alpha, $\alpha = 0.919$ Composite reliability = 0.935	Convergent validity, AVE = 0.673
Hedonic Pleasure	HP1 HP2 HP3 HP4 HP5 HP6	Cronbach alpha, $\alpha = 0.927$ Composite reliability = 0.943	Convergent validity, AVE = 0.733
Bidding Intention	BI1 BI2 BI3 BI4 BI5 BI6	Cronbach alpha, $\alpha = 0.934$ Composite reliability = 0.948	Convergent validity, AVE = 0.752

Table 3: Heterotrait-monotrait ratio (HTMT) Source: (Authors).

Construct	Heterotrait-monotrait ratio (HTMT)
HP <-> BI	0.757
GE <-> BI	0.673
GE <-HP	0.759
MR <-> BI	0.568
MR <-> HP	0.655
MR <-> GE	0.761

Assessment of Significance and Relevance of the Structural Model Relationships

The assessment was undertaken to evaluate the importance and relevance of relationships within the structural model, with the additional aim of fulfilling research objectives 1, 2, and 3, which were established to

investigate the relationships between external motivation factors (monetary reward and gamification elements) toward bidding intentions in the crowdsourcing platforms, the relationship between hedonic pleasure and bidding intentions in the crowdsourcing platforms and the relationship between hedonic pleasure as a mediating role on the external motivation factors (monetary reward and gamification elements) toward bidding intentions in crowdsourcing platforms.

The initial evaluation of the t-value, which measures the significance of the relationship, involved using a specific threshold value for the assessment. The significance level was set at 5% (0.05) in a two-tailed test, indicating that the indicator weight is statistically significant [12]. Based on Table 4, it can be concluded that the H3, H4 and H5 hypotheses were significant and below 0.05 p-value. Meanwhile, H1 and H2 were insignificant and above p-value. Thus, it indicates that external motivations such as monetary reward and gamification elements have no direct effect on bidding intentions on crowdsourcing platforms. Moreover, hedonic pleasure is significantly associated with bidding intention and hedonic pleasure also significantly mediates monetary reward and gamification elements with bidding intention on crowdsourcing.

Next is the assessment of the relevance of relationships. Regarding relevance, path coefficients typically range from -1 to +1. Coefficients nearing -1 signify robust negative relationships, while those approaching +1 indicate strong positive relationships [12]. Overall, all the exogenous variables have a positive correlation with bidding intentions in crowdsourcing.

Regarding the explanatory power of the research model, the R^2 suggests that our model explains 53.6 % of the variance in bidding intentions and 52 % of the variance in hedonic pleasure. It can be concluded that both variances give moderate explanatory power [12].

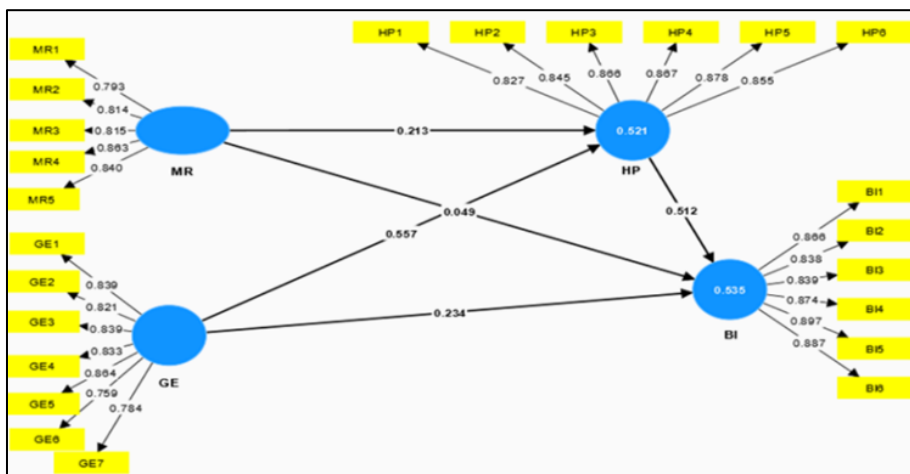


Figure 1: PLS-SEM Measurement. Source: (Authors).

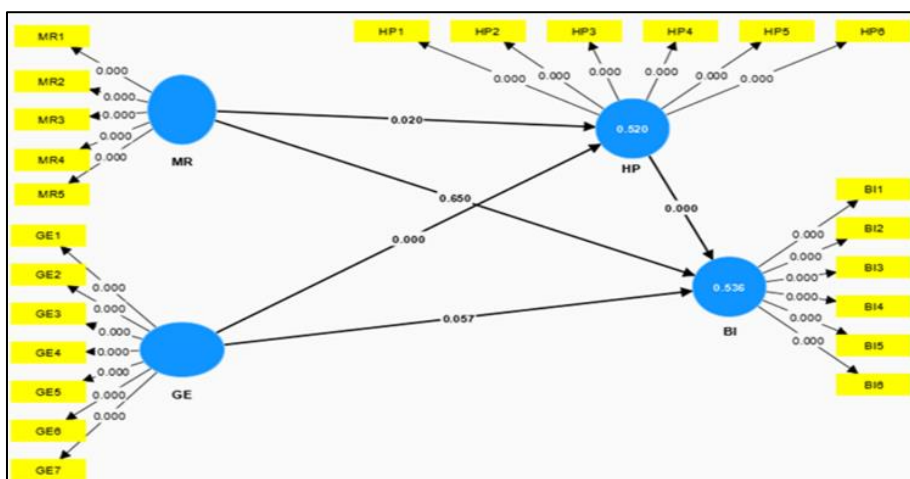


Figure 2: Structural Model Measurement. Source: (Authors).

Table 4: Overall Structural Model Results. Source: (Authors).

Hypotheses	Relationship	Path Coefficient	Coefficient of determination (R ²)	P-value	Result
H1	Monetary reward > Bidding intention	0.049	0.536	0.650	Not supported
H2	Gamification elements> Bidding intention	0.233		0.057	Not supported
H3	Hedonic pleasure > Bidding intention	0.514		0.000	Supported
H4	Monetary reward > Hedonic pleasure > Bidding intention	0.109	0.520	0.021	Supported
H5	Gamification elements> Hedonic pleasure > Bidding intention	0.287		0.000	Supported

Assessment of Mediation

To examine whether hedonic pleasure mediates the relationship between monetary reward and gamification elements toward bidding intention, this paper follows the procedure of the mediation test in SmartPLS [12].

Based on Table 5, hedonic pleasure mediated monetary reward and gamification elements with bidding intention in crowdsourcing. Thus, the result of the mediation analysis only showed an indirect relationship between external motivation factors (monetary reward and gamification elements) and bidding intentions in crowdsourcing. Nevertheless, this paper also conducted variance accounted for (VAF) to analyze the mediation strength. A VAF value of greater than 80% is full mediation, a value between 20% and 80% is partial mediation, and a value less than 20% means there is no mediation [12].

Therefore, it can be seen in Table 5 that 70% of the effect of monetary reward on bidding intention is explained through hedonic pleasure, while 55% of the effect of the gamification elements on bidding intentions is explained by hedonic pleasure. Since the value of VAF is between 20% and 80%, it indicates that hedonic pleasure is partially mediated by the relationship of monetary reward and gamification elements with bidding intention on crowdsourcing.

Table 5: Assessment of Mediation Effect. Source: (Authors).

Relationship	Path Coefficient	p-value	VAF	Mediation effect
Monetary reward > Hedonic pleasure > Bidding intention	0.109	0.021	0.7	Partial Mediation
Gamification elements> Hedonic pleasure > Bidding intention	0.028	0.000	0.55	Partial Mediation

DISCUSSION

This paper's first objective is to find the direct relationship between external motivations (monetary reward and gamification elements) and bidding intentions in crowdsourcing platforms. Next, this paper also proposes to create a model that consists of intrinsic and extrinsic motivation synergy in which intrinsic motivation (hedonic pleasure) becomes a mediating variable that connects the external motivations (monetary reward and

gamification elements) with bidding intentions in crowdsourcing platforms. Therefore, this paper also aims to analyse the mediating role of hedonic pleasures.

Based on this paper's analysis in Table 4, it can be seen that both of the external motivations (monetary reward and gamification elements) have no direct relationship with bidding intentions. Nevertheless, hedonic pleasure has a direct relationship with bidding intentions and significantly mediates the external motivations (monetary reward and gamification elements) with bidding intentions. Thus, this indicated that external motivations (monetary reward and gamification elements) only have an indirect relationship with bidding intentions.

Furthermore, this analysis also supported the model implemented in this paper, which is the Stimulus-Organism-Response (S-O-R) model that explains the power of the intrinsic mediating role that connects extrinsic motivations and bidding intention on crowdsourcing. It appeared that hedonic pleasures act as intrinsic mediating variables that create an indirect relationship between external motivations (monetary reward and gamification elements) and bidding intentions.

Theoretical contributions

This paper makes several contributions to the extant literature. This paper proposes an empirical analysis of the influences of external motivations (monetary reward and gamification elements) and bidding intentions in crowdsourcing platforms. At the same time, the previous study only explains the motivational theory and factors that influence decision-making, such as the traditional theory by Hackman and Oldham (1976) by [20] and Self Determination Theory (SDT) by [18] was only limited to conceptual studies.

In addition, this paper also explains the theory of decision-making by Herbert Simon (1997) and the theory of motivational factor, which is Herzberg's Two-Factor Theory (1968). This theory proposes a motivational theory that consists of intrinsic and extrinsic factors that influence bidding intentions in crowdsourcing.

Furthermore, this research also proposes a mediation model analysis which is the Stimulus-Organism-Response (S-O-R) model that explains the power of the intrinsic mediating role that connects extrinsic motivations and bidding intention on crowdsourcing. This paper proposes using hedonic pleasure as intrinsic motivation mediation variables to create an indirect relationship between extrinsic motivations (monetary reward and gamification elements) and bidding intention.

Practical contributions

This research proposes a framework that utilizes Herzberg's motivation factors and the Stimulus-Organism-Response (S-O-R) models to achieve appropriate and practical implications. This paper provides an empirical analysis on which H1 and H2 hypotheses were insignificant that implied extrinsic motivations (monetary reward and gamification elements) have no direct relationship with bidding intention that correlates with previous researchers [24]. Nevertheless, this paper also provides discovery on which hedonic pleasure has a direct relationship with bidding intentions. It significantly mediates the external motivations (monetary reward and gamification elements) with bidding intentions. Thus, this empirical analysis supported the Stimulus-Organism-Response (S-O-R) model that explains the power of the intrinsic mediating role that connects extrinsic motivations and bidding intention on crowdsourcing.

Limitations and Future Research

This paper has some limitations that should be acknowledged to guide future research. First, the chosen platforms for the respondents were eRezeki, LinkedIn, and Freelancer.com. Therefore, this research output may only give a partial view of decision-making among digital workers in Malaysia compared to other crowdsourcing platforms. Thus, future researchers may consider collecting data from other crowdsourcing platforms, which may give a different overview of Malaysian digital workers' bidding intentions. Next, while this paper's analysis found that external motivation (monetary reward and gamification elements) has no significant direct relationship with bidding intention, it does not represent all the external motivation factors' relationship with bidding intention. Future researchers may consider other external motivation factors such as task characteristics [7] and credible information sources [24] which are also significant with bidding intention.

CONCLUSION

This paper aims to provide an empirical analysis regarding the influences of external motivation factors toward bidding intention in crowdsourcing. While previous studies have explored intrinsic and extrinsic motivational factors affecting bidding decisions, they lack empirical analysis and hypotheses specifically regarding the motivational factors influencing digital workers' bidding intentions [18;20]. This paper can provide an empirical analysis of external motivation factors (monetary reward and gamification elements) toward bidding intention on which both factors have no direct effect which is also parallel with previous research [24].

Furthermore, this paper also proposes the powers of the mediating role, which was adopted from the Stimulus-Organism-Response (S-O-R) model that implemented intrinsic motivations (hedonic pleasures) as mediating variables that connect external motivations and bidding intention. This paper provided an empirical analysis of how hedonic pleasure significantly mediates external motivation factors (monetary reward and gamification elements) and bidding intention. Therefore, this paper proves the power of the mediating role that can create an indirect relationship, although the direct relationship between the independent and dependent variables is insignificant.

Moreover, this paper can prove the motivational synergy between intrinsic and extrinsic motivations that create an indirect strength toward bidding intention. Therefore, it implied that digital workers' participation in crowdsourcing platforms requires both motivations. Thus, by understanding and leveraging the mediating role of intrinsic motivation, crowdsourcing platforms can design more effective strategies to enhance bidding intention and overall user engagement. This balanced approach can lead to more sustainable and satisfying participation for all stakeholders involved.

ACKNOWLEDGMENT

The authors deeply express their gratitude to the Ministry of Higher Education, Malaysia for entrusting and funding this research with Fundamental Research Grant Scheme (FRGS) FRGS/1/2022/SS02/UITM/02/9.

REFERENCES

1. Assemi, B., Jafarzadeh, H., Abedin, E., Rabhi, F., & Mathies, C. (2022). Who gets the job? Synthesis of literature findings on provider success in crowdsourcing marketplaces. *Pacific Asia Journal of the Association for Information Systems*, 14, 40–73. <https://doi.org/10.17705/1pais.14104>
2. Bakici, T. (2020). Comparison of crowdsourcing platforms from social-psychological and motivational perspectives. *International Journal of Information Management*, 54, 102121. <https://doi.org/10.1016/j.ijinfomgt.2020.102121>
3. Cerejo, J., & Carvalhais, M. (2023). Anticipation as a Tool for Designing the Future. In *Springer series in design and innovation* (pp. 37–52). https://doi.org/10.1007/978-3-031-47281-7_4
4. Christians, G. (2018). The Origins and Future of Gamification. Senior Thesis, 254. https://scholarcommons.sc.edu/senior_theses.
5. Cruz, S. A., & Gameiro, A. (2023). Digital work platform: Understanding platforms, workers, clients in a service relation. *Frontiers in Sociology*, 7. <https://doi.org/10.3389/fsoc.2022.1075808>
6. Digital economy to contribute 22.6% of GDP and create 500,000 jobs by 2025 - MIDA | Malaysian Investment Development Authority. (2021, October 22). MIDA | Malaysian Investment Development Authority. <https://www.mida.gov.my/mida-news/digital-economy-to-contribute-22-6-of-gdp-and-create-500000-jobs-by-2025>
7. Duong, C. D., Nguyen, T. H., & Nguyen, H. L. (2023). How green intrinsic and extrinsic motivations interact, balance and imbalance with each other to trigger green purchase intention and behavior: A polynomial regression with response surface analysis. *Heliyon*, 9(10), e20886. <https://doi.org/10.1016/j.heliyon.2023.e20886>.
8. Feng, Y., Jonathan Ye, H., Yu, Y., Yang, C., & Cui, T. (2018). Gamification artifacts and crowdsourcing participation: Examining the mediating role of intrinsic motivations. *Computers in Human Behavior*, 81, 124–136. <https://doi.org/10.1016/j.chb.2017.12.018>.

9. Feyisetan, O., & Simperl, E. (2019). Beyond monetary incentives. *ACM Transactions on Social Computing*, 2(2), 1–31. <https://doi.org/10.1145/3321700>.
10. Goi, M., Kalidas, V., & Yunus, N. (2018). Mediating roles of emotion and experience in the stimulus-organism-response framework in higher education institutions. *Journal of Marketing for Higher Education*, 28(1), 90–112. <https://doi.org/10.1080/08841241.2018.1425231>
11. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/eb-11-2018-0203>
12. Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P. D., & Ray, S. (2021). Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook. In *Structural Equation Modeling: A Multidisciplinary Journal* 30(1). <https://doi.org/10.1080/10705511.2022.2108813>
13. Janom, N., Azhani, R. N., Aris, S. a. M., 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. <https://doi.org/10.11591/ijeecs.v19.i1.pp435-441>
14. Kaczmarek, Ł. (2017). Hedonic motivation. In *Springer eBooks* (pp. 1–3). https://doi.org/10.1007/978-3-319-28099-8_524-1
15. Kadir, M. F. I. A., Sulaiman, Z., Hasbullah, N. N., & Lo Ying Tuan, J. (2024). Preliminary Study of Perceived Enjoyment, Impulse Buying Tendency, Gamification, and Online Purchase Intention on e-Commerce using Stimulus-Organism-Response (S-O-R). *International Journal of Academic Research in Business & Social Sciences*, 14(1). <https://doi.org/10.6007/ijarbss/v14-i1/20578>.
16. Knutson, B., Wimmer, G. E., Kuhnen, C. M., & Winkielman, P. (2008b). Nucleus accumbens activation mediates the influence of reward cues on financial risk taking. *Neuroreport*, 19(5), 509–513. <https://doi.org/10.1097/wnr.0b013e3282f85c01>
17. Liang, H., Wang, M. M., Wang, J. J., & Xue, Y. (2018). How intrinsic motivation and extrinsic incentives affect task effort in crowdsourcing contests: A mediated moderation model. *Computers in Human Behavior*, 81, 168–176. <https://doi.org/10.1016/j.chb.2017.11.040>
18. Mahmud, M., Na'in, N., Ahmad, R., Chit, S. C., & Habbal, A. (2017). Interlinked motivation model to use mobile crowdsourcing platforms among low-income citizens. *Pertanika Journal of Science and Technology*, 25(10), 99–108.
19. Martinez, M. G. (2017). Inspiring crowdsourcing communities to create novel solutions: Competition design and the mediating role of trust. *Technological Forecasting and Social Change*, 117, 296–304. <https://doi.org/10.1016/j.techfore.2016.11.015>
20. Na'in, N., Husin, M. H., & Baharudin, A. S. (2021). Online Crowdsourcing Platform Continuous Participation During COVID-19: A Low-income Group Perspective in Malaysia. *The Journal of Asian Finance, Economics and Business*, 8(10), 317–326. <https://doi.org/10.13106/jafeb.2021.vol8.no10.0317>
21. Venketsamy, A., & Lew, C. (2022). Intrinsic and extrinsic reward synergies for innovative work behaviour among South African knowledge workers. *Personnel Review*, 53(1), 1–17. <https://doi.org/10.1108/pr-02-2021-0108>
22. Yang, C., Feng, Y., Zheng, X., Feng, Y., Yu, Y., Niu, B., & Yang, P. (n.d.). Fair or not: Effects of gamification elements on crowdsourcing participation. *AIS Electronic Library (AISeL)*. <https://aisel.aisnet.org/iceb2018/70>
23. Wu, W., & Gong, X. (2021). Motivation and sustained participation in the online crowdsourcing community: the moderating role of community commitment. *Internet Research*, 31(1), 287–314. <https://doi.org/10.1108/INTR-01-2020-0008>
24. Xu, H., Wu, Y., & Hamari, J. (2022). What determines the successfulness of a crowdsourcing campaign: A study on the relationships between indicators of trustworthiness, popularity, and success. *Journal of Business Research*, 139, 484–495. <https://doi.org/10.1016/j.jbusres.2021.09.032>
25. Ye, H. J., & Kankanhalli, A. (2017). Solvers' participation in crowdsourcing platforms: Examining the impacts of trust, and benefit and cost factors. *The Journal of Strategic Information Systems*, 26(2), 101–117. <https://doi.org/10.1016/j.jsis.2017.02.001>
26. Zhang, G., Yue, X., Ye, Y., & Peng, M. Y. (2021). Understanding the impact of the psychological Cognitive process on student learning satisfaction: combination of the Social Cognitive Career Theory and SOR model. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.712323>.