

Customer–perceived distributive peer justice climate, community identification, C2C interaction quality, and helping intention in MMORPG contexts

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ABSTRACT

This paper proposes and tests a theoretical model of the relational link between a novel form of customer–perceived fairness for a reward design (distributive peer justice climate) and C2C helping intention via community identification and online C2C interaction (friend–, neighboring customer–, audience–interaction) qualities in a collective consumption context (MMORPG). To test hypotheses, we amassed survey data within a collective consumption context (massively multiplayer online role–playing games, MMORPGs). We used structural equation modeling in analyzing the survey data. The results reveal that user–perceived distributive peer justice climate for a reward design enhances their C2C helping intention via community identification and C2C interactions in MMORPG contexts. Collective consumption–type service managers should focus on promoting the user–perceived distributive peer justice climate for their reward system to enhance users’ present C2C co–creation experience (community identification, C2C interaction) and future C2C co–creation behavior (helping intention). By adopting an intra–unit level distributive justice concept (customer–perceived distributive peer justice climate) to a reward design in a collective consumption context (MMORPGs), this study informed collective consumption–type service managers of the importance of its management.

Keywords: distributive peer justice climate, community identification, media functionality, C2C interaction quality, helping, collective consumption context, MMORPGs

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1. Introduction

Today, millions of users are interacting with each other in the context of collective consumption, such as massively multiplayer online role-playing games (MMORPGs). Shared experiences draw users to collective consumption contexts such as MMORPGs (Choi et al., 2007). The collective nature of the task and reward interdependencies among customers well describes shared experiences (Teng et al., 2012).

Per Ostrom et al. (2015), how coordination takes place among a number of customers is an important research challenge in the context of collective consumption.

A reward design is one of the useful coordination mechanisms to tackle interdependencies among actors in collective consumption contexts (Choi et al., 2007; Teng et al., 2012). Per Choi et al.'s (2007) arguments, an online collective consumption service system that fairly distributes rewards will maintain the harmony of the user group and encourage players to remember times when they helped or were helped by others. In other words, user-perceived distributive fairness climate toward a reward system, which fully reflects interdependencies among users (Teng et al., 2012), may act as an enabler of collective co-creating behavior such as customer-to-customer (C2C) interactions and helping in collective consumption contexts.

However, this claim has not been empirically confirmed. There is still a lack of research on the impact of the customer's intra-group fairness perception of how fairly each customer is rewarded for his or her contribution made with high interdependency with other customers (Teng et al.,

2012). An empirical investigation of the claim may require a customized concept of fairness different from individual-level fairness, which reflects how fairly an individual is treated by direct experience, and group-level fairness, which reflects how fairly the entire group is treated (Li et al., 2013). Namely, no empirical research has examined the effects of the intra-user group's perceived distributive fairness toward a reward system reflecting interdependencies among users, which calls for an urgent investigation. Only indirectly related studies (e.g., Jang, 2007; Kim and Baker, 2020; Li et al., 2013) exist. For example, Jang's (2007) research is a case study of customers' perception of reward distribution in an online game player community, Li et al.'s (2013) research is an empirical study on the relationship between employee perceived distributive peer justice climate and teamwork process, and the other studies (Kim and Baker, 2020) are all empirical studies of individual-level distributive justice as perceived by each customer through their personal experience.

This study attempts to fill the gap by focusing on the following research question (RQ):

RQ: Does the consumer's perception of the atmosphere in which each individual user receives a fair reward affect the consumer's perception of the experience in a collective consumption situation in which other users' rewards are visible? In other words, can consumers change their behavior simply by observing and feeling how fair other consumers' rewards are?

Namely, the current research investigates the role of perceived distributive peer justice climate for the reward design in enhancing C2C helping intention via community identification and C2C interactions in a collective consumption context (e.g.,

MMORPGs). MMORPGs seem to be an appropriate context for finding answers to the research questions of this study, as users experience online game situations together and the rewards are visible to each other. This research makes four contributions. First, this study newly converges intra-group (peer) organizational justice climate theory into service fairness theory, presenting a new comprehensive perspective. Second, the current study proposes a newly modified measure of perceived distributive peer justice climate for an in-game reward system reflecting interdependencies among users in a collective consumption context (MMORPGs). Third, the present research is the first to investigate the relational link from perceived distributive peer justice climate to C2C helping intention via community identification and C2C interaction quality perceptions. Lastly, the present study suggests and empirically validates a new manageable moderator's (in-game media functionality) effect of moderating the relationship between distributive peer justice climate and community identification.

2. Literature review

2.1 C2C co-creation

McColl-Kennedy et al. (2012, p.375) describe customer value co-creation as "benefits realized from integration of resources through activities and interactions with collaborators in the customer's service network." Kim et al. (2019, p. 6) identify C2C value co-creation as "benefits achieved via the integration of resources through direct and indirect interactions with other customers in a given social context." C2C interactions

are the steppingstone to C2C value co-creation. Lemke et al. (2011) define C2C interaction quality as the perceived superiority of customer-other customer interactions. Customers perceive C2C interaction quality through explicit and implicit cues generated during interactions with other customers (Söderlund, 2011). Per Ang and Zaphiris (2010), explicit C2C interactions in MMORPGs may be classified into some categories: "group management, coordination, ask for help, give help, friendly remarks, game chats, and real-life chats". Conversely, implicit C2C interactions are interactions with customers that are simply part of the scene (i.e., audience) (Kim and Choi, 2016). Following former academics' typology of inter-customer interactions (Söderlund, 2011), this research focuses on three distinct forms of online C2C interaction (Choi and Kim, 2020): online interactions with (1) family and friends; (2) neighboring users; and (3) the audience (i.e., a social environment). Friend- and neighboring customer-interactions, which are explicit, mainly consist of inter-user interactions through visible and/or audible activities. However, audience-interaction, which is implicit, mainly consists of inter-user interactions that can take place with no visible or audible activity (Choi and Kim, 2020). Compared to C2C interactions in the existing literature (e.g., Kim and Choi, 2016; Söderlund, 2011), C2C interactions in MMORPGs have similarities as shared experiences with neighboring customers within the scope of observation but are characterized by experiences through virtual avatars.

One known type of value co-creation behavior is C2C helping (Liao et al., 2023), which can be considered a C2C co-creation behavior (Yi and

Gong, 2013). C2C helping refers to customer activities that are intended to benefit other customers. Unlike employees' roles, customers' roles are less role-scripted; hence customers often fall into situations where they have to ask for other customers' spontaneous help (Yi and Gong, 2013). For example, many MMORPG players often participate in online communities, in which they often pass on new maps to use for the game or post tips and tactics for other players (Molyneux et al., 2015).

2.2 Equity theory

Historically, organizational scholars interested in justice issues have paid the most attention to Adams' (1965) equity theory (Greenberg, 1990). Adams' (1965) equity theory focuses on the relative reward amount. As per equity theory, if one's perception of the ratio of rewards to investment is lower than that of others, he/she will have a sense of unfairness. On the other hand, if that ratio is equal to or greater than others, he/she has a sense of fairness (Adams, 1965). An individual's fairness perception can generate positive attitudes and behaviors, while perceived unfairness leads to negative attitudes and behaviors (Adams, 1965).

Adams' equity theory is referred to as a conceptualization of distributive justice because it focuses on the outcome distribution fairness (Greenberg, 1990). Equity theory has been used in many fields, such as organizational behavior and services marketing, leading to organizational justice theory and service fairness theory (Su et al., 2019).

Organizational justice theory refines the

distributive justice construct into diverse levels: individual, group, and intra-group (Li and Cropanzano, 2009). First, distributive justice, which is distributive fairness at the individual level, means the perceived fairness of outcomes distributed among organizational employees. Next, a distributive justice climate, distributive fairness at the group level, describes the members' shared views about the fair distribution of the organization's resources and rewards. Furthermore, a distributive peer (or intra-unit) justice climate, which is a distributive fairness of the intra-group level, means "the extent to which the rewards that group/team members receive are appropriate, based on their contributions" (Li et al., p. 569).

2.3 Social identity theory

Social identity theory states that an individual can have multiple social identities besides a single personal identity (Tajfel and Turner, 1979). When a person identifies himself or herself in different social categories, the person's social identity can be formed by recognizing similarities with the social groups (Ashforth and Mael, 1989). Individuals develop their social identities through comparison with others in their organizations (Pratt, 1998). Likewise, community members may go through the same process of developing their social identities. After individuals develop their social identity, they begin to make intergroup comparisons. Intergroup comparisons allow individuals to assess their social identities (Tajfel and Turner, 1986).

2.4 Distributive peer justice climate

Social identity theory states that people identify themselves through the social groups to which they belong. A person's social identity is part of the person's self. The self-concept is strongly related to the person's knowledge and acceptance of membership in the social group to which he or she belongs (Tajfel and Turner, 1979). In particular, identification means a relatively permanent state in which a person defines himself or herself as a social group member (Haslam, 2001).

Several studies have supported the relationship between perceptions of justice and organizational identification (e.g., Olkkonen and Lipponen, 2006; Tyler and Blader, 2002). Olkkonen and Lipponen (2006) showed that organizational distributive and procedural justice positively influenced organizational identification. Organizations that allocate resources fairly can earn the respect of their employees and motivate them to identify with the organization (Tyler and Blader, 2002).

Given that a customer's role as a "partial employee" is inherently similar to an employee's role within an organization, this study presents the following hypothesis.

H1: Users' perceived distributive peer justice climate is positively related to their community identification.

Equity theory claims that the perception of distributive justice comes from comparing one's own input/output ratio to similar others' ratios (Li et al., 2013). In most teams, team members do not conclude other members' pay. However, they may vary in the effort they put into the team. So, a distributive peer justice climate can be high if team

members believe that the rewards other team members receive are justified, given the effort they put into achieving the team's goals. On the contrary, distributive justice can be low if the rewards that some team members may receive are out of proportion to their worth, as demonstrated by the effort they put in (Li et al., 2013). For instance, some team members may have low workloads compared to others but still receive the same rewards as everyone else.

Per Li et al. (2013), justice climate is a matter of how fairly a group (or team) is treated collectively, and peer justice climate is a matter of how fairly individual members of a group (or team) are treated. Especially distributive peer justice climate refers to "the extent to which team members believe that the reward or feedback they receive is commensurate with their effort" (p. 576). However, team members have no control over the distribution of rewards (the supervisor does), although team members have control over the amount of effort they put into the work process (Li et al., 2013). In summary, the distributive peer justice climate is perceived by combining the impact of service providers' and fellow users' behavior.

Per Li and Cropanzano (2009), peer fairness increases the quality of the interaction between team members. Friction can arise among team members when the distributive justice climate is low. If a team's members are not rewarded in proportion to their effort by an outside authority, acrimony may arise among team members (Li et al., 2013). Considering the fact that a customer's role as a "partial employee" is inherently similar to an employee's role within an organization, we can make the following predictions. The higher the

level of the users' perceived distributive peer fairness, the more likely they are to perceive the quality of the inter-user (C2C) interactions high within the user community. Reflecting that both explicit interactions with strong or weak tie users nearby (friend-, neighboring customer-interaction) and implicit interactions with the surrounding audience (audience-interaction) can be grouped together in the category of online C2C interactions (Choi and Kim, 2020), the present research presents the following hypotheses.

H2: Users' perceived distributive peer justice climate is positively related to their perceived friend-interaction quality.

H3: Users' perceived distributive peer justice climate is positively related to their perceived neighboring customer-interaction quality.

H4: Users' perceived distributive peer justice climate is positively related to their perceived audience-interaction quality.

2.5 Community identification

Along with the social identity theory, people may have diverse social identities through self-categorization or social comparisons and define themselves as members of these categories or groups. Thus, individual behavior's motivation is broadened from benefiting the individual to benefiting the group (Chen and Lin, 2016). The theory of social identity suggests that, during the self-categorization process, individuals downplay their personal values. A change in self-concepts can influence community processes, such as cooperation and interaction, positive group attitude, and cohesion (Chen and Lin, 2016). From a customer's viewpoint, the higher the level of

identification with an organization, the more likely the customer will be satisfied with the experiences with the organization's services (Papista and Dimitriadis, 2012). Individuals who are highly identified with an identification target fulfill a basic self-definition need and thus receive additional benefits that lead to a more positive assessment of the company's performance (Popp and Woratschek, 2017).

By applying the results of previous studies, such as Chen and Lin (2016), Papista and Dimitriadis (2012), and Popp and Woratschek (2017), to the collective consumption contexts, we can make the following predictions. The higher the level of users' identification for a user community, the more likely they are to be satisfied with the experiences within the user community, such as online C2C interactions (friend-, neighboring customer-, audience-interaction). Therefore, the current study proposes the following hypotheses.

H5: Users' community identification is positively related to their perceived friend-interaction quality.

H6: Users' community identification is positively related to their perceived neighboring customer-interaction quality.

H7: Users' community identification is positively related to their perceived audience-interaction quality.

Community identification involves the self-awareness of his/her community membership and members' strong connection to one another (Algesheimer et al., 2005). Per social identity theory, community identifiers perceive the community's fate as intertwined with their own (Ashforth and Mael, 1989). Belonging to a

consuming community can instill a sense of responsibility to the community members, which can lead to helping behavior toward its members (Liao et al., 2023). Likewise, community identification can lead to a sense of responsibility to the community, which in turn can lead to an increase in helping behavior (Liao et al., 2023). Thus, we hypothesize:

H8: Users' community identification is positively related to their C2C helping intention.

2.6 C2C interactions and helping

Friend-interaction quality refers to “the perceived judgment of the superiority of customers' interaction with people with whom they have strong social ties, such as friends and family” (Kim and Choi, 2016, p. 386).

Per Rosenbaum and Massiah (2007), when customers receive instrumental/social-emotional support through interactions with other customers in a service context, they usually demonstrate their appreciation to the context by exhibiting customer voluntary performances (i.e., citizenship behavior), such as helping the firm and its customers. This phenomenon is based on the norm of reciprocity from the psychological contract theory. Per Rousseau (1989), the psychological contract means “an individual's beliefs regarding the terms and conditions of a reciprocal exchange agreement between the focal person and another party. Key issues here include the belief that a promise has been made and a consideration offered in exchange for it, binding the parties to some set of reciprocal obligations” (p. 123). When one party receives benefits from the other, according to psychological contract theory, the

norm of reciprocity motivates the party to repay the favors so that the relationship can continue in the future (Bi, 2019). When customers perceive a high level of interaction quality by receiving emotional or instrumental support from their friends in a service setting, they are more likely to reciprocate by engaging in voluntary performance, such as helping other customers, that benefits the firm. Likewise, high-quality friend-interactions can increase the likelihood of receiving instrumental/social-emotional support, which, in turn, can enhance users' helping intention through reciprocation (Bi, 2019; Rosenbaum and Massiah, 2007). Thus, we hypothesize:

H9: Users' perceived friend-interaction quality is positively related to their C2C helping intention.

Collective consumption contexts, such as MMORPGs, enable customers to interact with each other instead of primarily interacting with employees, which can lead to increased customer engagement. In such settings, neighboring customer-interaction quality plays an important role. Neighboring customer-interaction quality refers to “the perceived superiority of explicit interactions between customers who are physically or virtually nearby” (Kim and Choi, 2016). These interactions can be highly impactful, as they allow customers to share knowledge, opinions, and experiences, positively influencing their experiences and enhancing overall satisfaction (Molyneux et al. 2015).

High-quality neighboring customer-interaction can provide customers with socio-emotional (e.g., empathy, concern) or instrumental (e.g., practical tips or resources) support, which can positively

affect their experiences and behaviors (McGrath and Otnes, 1995). Based on the norm of reciprocity from the psychological contract theory, we can predict as follows. High-quality neighboring customer-interactions can lead to receiving instrumental/social-emotional support, which, in turn, can enhance users' helping intention by reciprocation (Bi, 2019; Rosenbaum and Massiah, 2007). Hence, we hypothesize:

H10: Users' perceived neighboring customer-interaction quality is positively related to their C2C helping intention.

Audience-interaction quality refers to how customers perceive the superiority of implicit interactions with other customers in an audience setting (Kim and Choi, 2016). These interactions can occur without any visible or audible activity and are related to the atmospheric qualities of a place (Baker, 1986). Rosenbaum (2006) suggests that other customers may provide socio-emotional support to customers, even though they do not interact directly with others. For instance, observing other players' actions and reactions can increase the sense of immersion and engagement in MMORPGs by providing socio-emotional support through social contagion with non-verbal cues such as modest crowding.

A high-quality audience-interaction can increase the likelihood of receiving socio-emotional support, which in turn can increase helping intention through reciprocation (Bi, 2019; Rosenbaum and Massiah, 2007). Hence, we hypothesize:

H11: Users' perceived audience-interaction quality is positively related to their helping intention.

2.7 Media functionality Moderating

Media functionality means "the degree to which a media can do something for a user in social interactions" (Sheer, 2011, p. 86). Perceived media functionality is operationalized by "the level of being easy, enjoyable (fun), flexible, effective, and communication apprehension-alleviating when utilizing a media platform" (Lee and Borah, 2020, p. 58).

We claim that users' perceived media functionality can proportionally lead to their usage. Per Toma and Hancock (2010), if the users of online dating sites perceive the editing tools to be functionally effective in the beautification of their projected appearance, they would be more likely to use the tools as a means of attraction to potential mates. Likewise, when users perceive a tool (e.g., in-game interactive media) as functionally effective in making C2C communication and interaction, they would be more likely to utilize it to boost enjoyable gaming interactions.

With more peer interaction accumulation thanks to highly functional interactive media, more accurate information about the communication source makes the receivers better evaluate the communicator (Onofrei et al., 2022). If users feel they receive knowledgeable and trustworthy information, they will utilize it to enhance experience quality (Onofrei et al., 2022).

Information obtained from peer users through C2C interactive media can help reduce uncertainty and increase confidence in one's judgment (Onofrei et al., 2022). In other words, information about other users, accumulated more thanks to in-game interactive media functionality, will reduce

the user's doubts about the distributive peer justice climate (DJC) perception and strengthen the positive link from DJC to community identification (CID).

Hence, we propose in-game interactive media functionality to moderate the relationship between DJC and CID in collective consumption contexts. We posit that, with a higher level of in-game interactive media functionality, users' perceived distributive peer justice climate may contribute more to user-community identification development. Accordingly, we suggest the following hypothesis:

H12: In-game interactive media functionality positively moderates the relationship between distributive peer justice climate and community identification.

Altogether, the overall research model is exhibited in Figure 2-1.

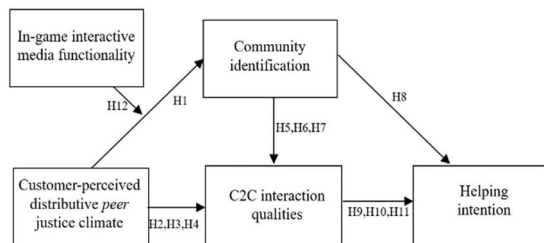


Fig. 2-1. Research model

3. Research method

3.1 Measures and sample

Based on previous literature, we chose suitable measurement items for the study. Each measurement item of the current study was used directly or modified to measure each construct.

Each measurement's reliability was higher than .70, which implied internal consistency.

Table 3-1 exhibits the measurement items of each construct used in the current study. Every item used in this study was based on established research, as noted in Table 3-1. Every item was used for the analysis, and every measure is shown in Table 1. The respondents were inquired to answer on a Likert scale varying from 1 (strongly disagree) to 7 (strongly agree).

Tab. 3-1. Measurement items

Construct and measurement items	References
Customer-perceived distributive peer justice climate (DJC) The scores that XYZ users earned were appropriate considering the contribution of the role they played (DJC1). Some XYZ users who contributed to the user community, such as helping other users, received appropriate rewards (DJC2). Some XYZ users who hurt the mood of the user community were given appropriate penalties or warnings (DJC3). Some XYZ users received better scores than they deserved (r) (DJC4).	Li and Cropanzano (2009) Li et al. (2012)
Community identification (CID) When someone criticizes XYZ users, it feels like a personal insult (CID1). The friendships I have with other XYZ users mean a lot to me (CID2). I see myself as a part of XYZ user community (CID3). When I talk about XYZ user community, I usually say 'we' rather than 'they' (CID4).	Algesheimer et al. (2005) Mael and Ashforth (1992)
In-game media functionality (MDF) XYZ's in-game interactive media (e.g., text chat) is easy to use (MDF1). XYZ's in-game interactive media (e.g., text chat) is fun to use (MDF2). XYZ's in-game interactive media (e.g., text chat) is flexible to use (MDF3). XYZ's in-game interactive media (e.g., text chat) is effective for online communication (MDF4). XYZ's in-game interactive media (e.g., text chat) alleviates my communication apprehension (MDF5).	Lee and Borah (2020) Sheer (2011)
Friend-interaction quality (FIQ) I feel good about the interaction with friends/family at XYZ (FIQ1). I feel satisfied with being part of my friends/family at XYZ (FIQ2). I feel closer to friends/family at XYZ (FIQ3).	Kim and Choi (2016) Lemke et al. (2011)
Neighboring customer-interaction quality (NIQ) I feel good about the interaction with other neighboring users at XYZ (NIQ1). I feel friendship with other neighboring users whom I meet at XYZ (NIQ2). I feel close to other neighboring users at XYZ (NIQ3).	Kim and Choi (2016) Lemke et al. (2011)
Audience-interaction quality (AIQ) I feel in harmony with all of the users at XYZ (AIQ1). I feel satisfied with being there with all of the users at XYZ (AIQ2). I feel good about the modest crowdedness of all of the users at XYZ (AIQ3).	Kim and Choi (2016) Lemke et al. (2011)
C2C helping intention (HLP) I will assist other XYZ users if they need my help (HLP1). I will help other XYZ users if they seem to have problems (HLP2). I would teach other XYZ users to use the service correctly (HLP3). I will give advice to other XYZ users (HLP4).	Groth (2005) Yi and Gong (2012)

The current research surveyed 298 MMORPGs users in South Korea. MMORPGs have characteristic traits of collective consumption contexts. Many gamers interact with each other in an MMORPG (Choi et al., 2007). MMORPG users' activities involve diverse collaborative activities

(Ang and Zaphiris, 2010).

An online survey firm amassed 298 out of 400 responses for a 74.5% usable response rate. Respondents who wrote down non-MMORPG online games were excluded from the sample. Each subject was asked to recall his or her most recent experience with purchase pals (e.g., friends). The sample consisted of 63.1% males, 18.1% were in their 10s, 40.9% were in their 20s, 30.0% were in their 30s, 7.0% were in their 40s, and 4.0% were in their 50s.

3.2 Common method bias

When cross-sectional data are gathered through a single survey, common method bias can be a potential concern. In order to curtail the risk of bias in the data, we kept the personal information required to a minimum and separated the screens on which respondents answered each question. Then, we conducted two analyses. First, we performed Harman’s single-factor test by including all items without rotation. The results were as follows. The Kaiser–Meyer–Olkin (KMO) index was 0.884 (> 0.7), and the first principal component explained 35.655% of the total variance, lower than the threshold level (40%, Podsakoff et al., 2003). Second, we performed Lindell and Whitney’s (2001) marker variable technique to measure the degree of method bias. As a result, the correlations of a single, theoretically unrelated item with the constructs were lower than $r = 0.127$. These correlation scores are well below the recommended threshold value ($r = 0.20$), at which common method bias begins to substantially impact the data qualities as imposed by Malhotra et al. (2006). Hence, the

sufficiently low correlations confirm that common method bias does not seem to pose a substantial risk to the data quality.

3.3 Measurement model

We tested the proposed model through PLS–SEM. We have used the standard PLS algorithm with a non-parametric bootstrap of 5000 replications (Ringle et al., 2015) and a path weighting scheme for the inner approximation to evaluate the parameters of the model (e.g., path coefficients, standard errors).

When the item loadings exceed the threshold of 0.70, the model’s results establish reliability (see Table 3–2). Composite reliability (CR) scores were greater than 0.80. This further confirms the constructs’ reliability. Average variance extracted (AVE) scores were greater than 0.50. This confirms convergent validity (Hair et al., 2019).

Tab. 3–2. Summary of measurement results

Construct	Measurement items	Factor loading	Cronbach’s α	Composite reliability (CR)	Average variance extracted (AVE)
DJC	DJC1	0.859	0.878	0.883	0.733
	DJC2	0.817			
	DJC3	0.852			
	DJC4	0.894			
CID	CID1	0.868	0.907	0.908	0.782
	CID2	0.850			
	CID3	0.917			
	CID4	0.900			
MDF	MDF1	0.713	0.855	0.907	0.595
	MDF2	0.754			
	MDF3	0.714			
	MDF4	0.813			
	MDF5	0.852			
FIQ	FIQ1	0.853	0.875	0.937	0.795
	FIQ2	0.908			
	FIQ3	0.913			
NIQ	NIQ1	0.847	0.849	0.868	0.768
	NIQ2	0.920			
	NIQ3	0.860			
AIQ	AIQ1	0.751	0.811	0.882	0.717
	AIQ2	0.890			
	AIQ3	0.892			
HLP	HLP1	0.873	0.905	0.908	0.780
	HLP2	0.909			
	HLP3	0.923			
	HLP4	0.826			

The square root of the AVEs in the diagonals is greater than the correlations of the latent variables, which confirms the discriminant validity (see Table 3-3).

Tab. 3-3. Inter-construct correlations and discriminant validity results

Variables	Mean	SD	DJC	MDF	CID	FIQ	NIQ	AIQ	HLP
DJC	4.524	1.069	0.856						
CID	3.811	1.302	0.348	0.884					
MDF	4.605	1.009	0.452	0.330	0.771				
FIQ	5.456	1.106	0.342	0.300	0.281	0.892			
NIQ	4.869	1.136	0.288	0.305	0.411	0.504	0.876		
AIQ	4.533	1.046	0.410	0.390	0.483	0.480	0.591	0.847	
HLP	4.570	1.199	0.420	0.573	0.362	0.459	0.451	0.490	0.883

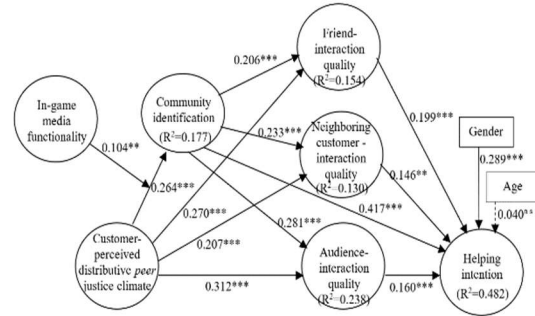
Notes: SD = standard deviation. Intercorrelations are presented in the lower triangle of the matrix. Numbers on the diagonal represent the square roots of the AVE.

The current research then assesses the Heterotrait-Monotrait (HTMT) scores, where all results are less than 0.90, further supporting the discriminant validity. The results establish the study's reliability, convergent validity, and discriminant validity. These results support the overall measurement model.

3.4 Structural model

As part of testing the hypothesized relationships, this study measured path coefficients (β), coefficient of determination (R^2), effect size (f^2), predictive validity (Q^2), and PLS-predict scores.

The path coefficient estimates are shown in Figure 3-1.



Notes: * $p < .10$; ** $p < .05$; *** $p < .01$; n.s.: Not significant.

Fig. 3-1. Structural equation model with the estimated path coefficients and test results

The standardized structural coefficient estimates and their significance are presented in Table 3-4.

Tab. 3-4. Results of the structural model

Hypothesized path	Hypothesis	β	t	p	Results
DJC \rightarrow CID	H1	0.264	3.713	0.000	Supported
DJC \rightarrow FIQ	H2	0.270	4.036	0.000	Supported
DJC \rightarrow NIQ	H3	0.207	3.146	0.002	Supported
DJC \rightarrow AIQ	H4	0.312	5.347	0.000	Supported
CID \rightarrow FIQ	H5	0.206	3.570	0.000	Supported
CID \rightarrow NIQ	H6	0.233	3.763	0.000	Supported
CID \rightarrow AIQ	H7	0.281	4.775	0.000	Supported
CID \rightarrow HLP	H8	0.417	7.598	0.000	Supported
FIQ \rightarrow HLP	H9	0.199	3.754	0.000	Supported
NIQ \rightarrow HLP	H10	0.146	2.519	0.012	Supported
AIQ \rightarrow HLP	H11	0.160	2.935	0.003	Supported
DJC x MDF \rightarrow CID	H12	0.104	2.209	0.027	Supported

The findings in Figure 2 and Table 4 verify that the DJC-CID connection is significant ($\beta = 0.264$, $p < 0.01$). Likewise, DJC-FIQ ($\beta = 0.270$, $p < 0.01$), DJC-NIQ ($\beta = 0.207$, $p < 0.01$), and DJC-AIQ ($\beta = 0.312$, $p < 0.01$) are significant. Hence, the results support H1, H2, H3, and H4.

The current study also examines the relationship between CID-FIQ ($\beta = 0.206$, $p < 0.01$), CID-NIQ ($\beta = 0.233$, $p < 0.01$), CID-AIQ ($\beta = 0.281$, $p < 0.01$), and CID-HLP ($\beta = 0.417$, $p < 0.01$), supporting H5, H6, H7, and H8.

Next, this study examines the relationship between FIQ–HLP ($\beta = 0.199, p < 0.01$), NIQ–HLP ($\beta = 0.146, p < 0.05$), and AIQ–HLP ($\beta = 0.160, p < 0.01$), supporting H9, H10, and H11 (see Table 4).

Furthermore, the interaction term, DJC x in-game media functionality, significantly influences CID ($\beta = 0.104, p < 0.05$), supporting H12. Figure 3 implies the moderation effect’s visual representation. Results show that in-game media functionality strengthens the positive relationship between distributive peer justice climate and community identification (see Figure 3–2).

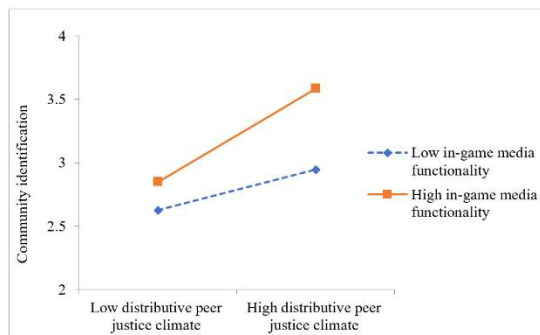


Fig. 3–2. The moderating effect of in-game media functionality on the DJC–CID link

Moreover, the result indicates that gender’s influence on the outcome construct (HLP) is significant ($p < 0.01$), but age’s influence is not significant ($p > 0.10$). The present study estimates R^2 of 0.177 for CID, 0.154 for FIQ, 0.130 for NIQ, 0.238 for AIQ, and 0.482 for HLP. This supports the goodness of fit and indicates the acceptable level of variance of the latent variables. To check effect sizes (f^2), we follow Cohen’s (1988) guidelines. The results display various effect sizes ranging from 0.022 to 0.271 to explain the

hypothetical relational links (H1–H12). The findings additionally support Stone–Geisser’s Q^2 predictive validity aspect, illustrating values of 0.146 for CID, 0.121 for FIQ, 0.107 for NIQ, 0.208 for AIQ, and 0.145 for HLP (Chin, 2010). The PLS–predict analysis of the model, which estimates the out-of-sample predictive validity, establishes the research’s nomological validity (Shmueli et al., 2019). Therefore, the research divides the sample with 10 by 10 repetitions to calculate the residual histograms and the root mean square error (RMSE). This result shows an acceptable predictive power since all the PLS–SEM $Q^2_{predict}$ values for all model indicators are above zero. Furthermore, most of the indicators used in the PLS–SEM analysis produce smaller predicting errors than the linear regression model (LM) (Shmueli et al., 2019).

4. Discussion

4.1 Theoretical implications

The present study extends the extant literature on perceived justice by first adapting the concept of customer–perceived distributive peer justice climate about the reward system into a collective consumption context, where users co-exist and are interdependently co-creating. This study, which goes one step further from simply judging the individual–level fairness of the tangible outcome allocation to comprehensively judging the intra–unit level fairness of it comprising C2C comparison, provides new implications for what kind of reward design is needed in the collective consumption contexts. By addressing the reward design as a coordination tool for tackling

interdependencies among users participating in collective co-creation and adapting intra-unit level distributive justice climate concept, this study progressively inherits and expands the streamlining of extant research focusing on individual customer-experienced distributive justice and its effects (e.g., Kim and Baker, 2020).

Next, to the extent we know, this is the first research to empirically examine the relational linkage from intra-unit level distributive justice climate to C2C helping intention through community identification and C2C interaction perception. Enhancing C2C helping intention by adequately managing the reward system can be key to building up a virtuous cycle from present C2C co-creation (C2C interaction quality experience) to future C2C co-creation (C2C helping intention). Hence, this study adds a new impact path toward online collective consumption service firms' success.

Lastly, the current study empirically examines a new moderator's (in-game interactive media functionality) effect on the relationship between perceived distributive peer justice climate and community identification. Results show that this new moderator (in-game interactive media functionality) strengthens the perceived distributive peer justice climate's positive influence on community identification.

4.2 Managerial implications

First, our data propose that collective consumption-type services managers should focus on the co-existing customers' distributive justice perceptions at the intra-unit level. Accordingly, collective consumption-type

services managers might focus on introducing reward designs that are aimed at the intra-unit level (e.g., giving contribution-proportional special scores to gaming units' individual members) rather than focusing solely on the individual level (e.g., giving special scores to superstar performers) or unit level (e.g., giving special scores to top performing gaming units). The accompanying concrete action plans might also be focused on the level. For example, the users' contribution scoring system should appropriately calculate and reflect the interdependent contributions of each user. Users' contribution scores could be opened in easy-identifiable formats like visualization.

Next, this research indicates that the perceived distributive peer justice climate indirectly impacts C2C interaction quality perceptions through community identification. Collective consumption service providers should implement a reward design that matches customers' fairness needs in tangible outcome distribution from the viewpoint of C2C comparison. Service providers had better actualize a reward design on which users can perceive enough distributive fairness, making them identify themselves as a member of the user community, which in turn makes them feel better about C2C interactions. Moreover, our results show that community identification significantly impacts three C2C interaction qualities (FIQ, NIQ, AIQ). Therefore, service providers should introduce a fair reward design that allows users to identify themselves as user community members and interact with friends and strangers through avatars and enjoy the overall atmosphere of the user community.

Also, our data show that intra-unit level reward

design fairness directly enhances users' perceived C2C interaction qualities (FIQ, NIQ, AIQ). Social interactions with other users are one of the users' primary motivations for playing any MMORPG (Yee, 2006). Hence, when introducing a fair reward design in an intra-unit level sense, service providers should consider its possible impact on three kinds of C2C interaction quality (FIQ, NIQ, AIQ).

In addition, collective consumption-type service managers should implement reward designs to ensure that users perceive fairness in the C2C comparison of the input/output ratio. For example, when customers judge distributive peer justice, they usually consider their peer customers' input/output ratio. Hence, collective consumption service providers should implement reward designs to ensure that users perceive fairness in the C2C comparison of those ratios.

Finally, our data show that in-game interactive media functionality strengthens the perceived distributive peer justice climate's positive influence on community identification. From managers' perspective, in-game interactive media functionality can be used as a catalyst to amplify the effect of reward design, which is fair in the sense of a distributive peer justice climate, on boosting users' community identification. When collective consumption-type service managers focus on introducing fair rewards designs, creating simple, entertaining, and well-functioning in-game communication channels is desirable so that media functionality is perceived as high. What is the reason? It is because such measures can better lead to community identification by reducing uncertainties in self-judgment by making it easier for users to feel and confirm the distributive justice

climate at the intra-unit level.

4.3 Limitations and future research

First, this study analyzed the impact of the distributive peer justice climate of reward design on C2C interactions and helping intention in online collective consumption settings. Future studies are expected to consider other known peer justice climate factors, such as procedural and interactive justice climate. Next, although this study's hypotheses imply causal relationships in nature, the research design is cross-sectional. A longitudinal research design can be considered in future research. Furthermore, this research was performed in an online collective consumption context (i.e., MMORPGs), limiting the generalizability of the findings. We propose that future research extend this work by testing the findings in other collective consumption services (e.g., physical encounters). Investigating other online collective consumption situations, where the form of rewards or the observability of neighboring users' rewards differs from MMORPGs, may be another interesting way to extend the results of this study.

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고객의 분배공정성분위기 지각과 커뮤니티동일시, 고객간상호작용인식, 도움행동의도의 관계에 대한 연구

김현식*

요약

본 연구는 온라인 집단소비 서비스 상황에서 다른 고객들의 보상에 대한 고객의 분배공정성분위기 지각이 커뮤니티동일시, 고객간상호작용인식, 도움행동의도에 미치는 영향에 대한 이론적 모델을 제안하고 실증한다. 가설을 테스트하기 위해 온라인 집단소비 서비스(대규모 멀티플레이어 온라인 롤플레잉 게임, MMORPG) 이용자를 대상으로 설문 조사 데이터를 수집하여 구조 방정식 모델링을 통해 분석하였다. 본 연구는 MMORPG 상황에서 보상설계에 대한 고객의 분배공정성분위기 지각이 커뮤니티동일시, 고객간상호작용인식을 변화시켜 도움행동의도를 변화시킨다는 것을 보여준다. 집단소비형 서비스 관리자는 사용자의 현재 C2C 가치공동창조 경험(커뮤니티동일시, 고객간상호작용인식)과 미래 C2C 가치공동창조 행동(도움행동의도)을 향상시키기 위해 보상 시스템에 대한 고객의 분배공정성분위기 지각을 개선하는 데 중점을 두어야 할 것이다. 본 연구는 온라인 집단소비 서비스 상황(MMORPG)에서 보상 설계에 관한 고객의 분배공정성분위기 지각과 고객간상호작용 인식의 관계를 실증함으로써 분배정의 이론의 발전에 기여하고 있다.

표제어: 분배공정성분위기, 커뮤니티동일시, 고객간상호작용, 도움행동, 집단소비, MMORPGs

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