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A Transaction Cost Approach to the Role of Cooperatives in Energy Transition*

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ABSTRACT

Purpose – This paper investigates how community-based approaches to renewable energy help in to substitute renewables for fossil fuels in Europe in the context of transaction costs.

Design/Methodology/Approach – This paper uses qualitative research methods, which feature online interviews focusing on 14 REScoop.eu member cooperatives and organizations, four non-REScoop.eu organizations, and a complementary online survey of 32 respondent REScoop.eu member cooperatives.

Findings – The paper finds that (a) cooperative legal form is not seen to generate the perceived advantages to cooperatives in renewable energy proliferation, or (b) in addressing associated land use issues; further (c), there a perception that renewable energy cooperatives directly help in renewable energy proliferation by localizing energy production and stimulating the local economy (d) by making renewables more acceptable at the local level, and (e) by building trust-based relationships within these communities. It is also perceived that (f) such cooperatives are hampered by the general lack of corresponding professional and technical expertise, volunteer work, and the democratic decision-making process.

Research Implications – The major implication is that localization is key for renewable energy cooperatives to be significant drivers of renewable energy in Europe. The paper contributes insights on cooperative organization form itself, and by addressing how transaction costs help in renewable energy proliferation.

I. Introdution

The general aim of the paper is to shed light on how bottom-up approaches to propagate an energy transition help in the substituting renewables for fossil fuels towards a cleaner energy mix. The focus is on REScoop.eu, a federation of renewable energy cooperatives in Europe with a membership of about 1,900, as this would (a) simplify the analysis (Bauwens et al., 2016), (b) focus on more comparable community-based approaches across countries, and because (c) cooperatives are relatively strong forms of community-based energy systems in Europe.

Cooperatives are firms owned by consumers or by direct producers of goods and services (Hansmann, 1999), wherein ownership is directly tied to goods and services, either through sales or purchases. Consumers as owners are in charge of governance, and decide on prices and profits, blurring the line between producers and consumers, hence the notion of a prosumer. Cooperative members, as prosumers, have access to information on the nature of management and quality of production, reducing information asymmetry and facilitating transparency. The International Co-Operative Alliance (ICA) defines a cooperative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise" (Rodgers, 2015), hence the impression that cooperatives are types of collective efforts to accomplish a common goal. Cooperatives are instances of collective action wherein groups of individuals voluntarily organize themselves to reap the benefits from their own efforts, being involved in managing common-pool resources (Ostrom, 1990). The ICA definition introduces another essential feature of cooperatives: direct ownership by consumers or producers must be collective and democratic. The ownership structure in cooperatives is the means towards collective action to accomplish some goal. Cooperatives therefore have an organizational model in which an association of individuals jointly own a socio-economic venture from which they benefit. The meeting of the needs and aspirations of the group is the primary reason for organizing; profit maximization is not the main objective. Cooperatives then can be defined as "firms that are collectively owned and democratically controlled directly by consumers or producers to accomplish some goal".

Cooperatives maintain common ownership of some resources, coordinated through some degree of integration, such as profits from renewable energy projects, something that cannot be adequately provided by a price system in purely market arrangements. Also, they involve some degree of separate and autonomous property rights on most assets, such as member owned shares (Ménard, 2007; Šahović & da Silva, 2016). Separate property rights cooperatives maintained on most assets distinguish cooperatives from firms owned by capital investors. Residual claims, or the rights to receive the differences between organization's gains and supposed payments to actors under a fixed claim contract (Fama & Jensen, 1983), are restricted to the group supplying patronage under the organization's contracts, where the presiding authority is elected by the same group (Vitaliano, 1983). Patrons are those that transact with the firm, meaning the firm's customers or suppliers (Hansmann, 1999).

II. Research Questions

Cooperatives can realize a community-based approach to renewable energy, something between private and state ownership. It may then be important for countries to have a thriving renewable energy cooperative sector because they can help in substituting renewables for fossil fuels toward a cleaner energy mix. The general focus is how renewable energy cooperatives help in the proliferation of renewable energy in Europe. The literature cites several ways renewable energy cooperatives can incentivize renewable energy adoption. First, community-based approaches tend to favor renewables, tending to be more

distributed in nature than fossil fuels, and hence more readily available, and with some exceptions, are reasonably scalable. These properties allow renewables to be suitable for production at the community level in locally owned and managed energy systems (Bhattacharyya, 2013).

Second, renewable energy cooperatives can incentivize renewable energy adoption through the desire to democratize the energy sector. As communities are more in charge of energy production through their own energy system, they will be less dependent on energy firms for energy. One factor that led to the emergence of renewable energy cooperatives in Europe is the desire of energy consumers to gain better control of energy production and prices to get around an oligopolistic energy market (Huybrechts & Mertens, 2014). The literature also asserts that some incentives associated with establishing or participating in community-based energy systems are democratization-related (Boon & Dieperink, 2014; Dóci & Vasileiadou, 2015).

Third, renewables have low power densities, which result in negative externalities arising from massive land use requirements. Production of energy from renewables then is tied to land use, making renewables rivalrous goods. Renewables then have the properties of a common pool resource, requiring collective action to solve. Ownership models in which benefits accrue privately and are exclusive are likelier to be rejected, and can become locally contentious (Gorroño-Albizu et al., 2019; Walker & Devine-Wright, 2008). Thus, a more equitable distribution of benefits from a renewable energy project should be expected to make renewables more acceptable. It can be argued that cooperatives can offer solutions to such a common pool resource problem. Cooperatives can help achieve a more equitable distribution of benefits from resulting renewable energy projects through more open and participatory development and management schemes, being more local in terms of the extent, and more collective in terms of benefit accrual. Therefore, cooperatives can solve common pool resource problem related to land use by making

the distribution of benefits more equitable. Equity considerations do matter as far as energy transition policy is concerned (Bartiaux et al., 2018; Chapman et al., 2018). One proposition then is that renewable energy cooperatives directly help in the proliferation of renewable energy in Europe by (a) having a suitable organizational form to develop and manage energy systems at the community level, through (b) the desire to democratize the energy sector, and (c) by making distribution of the associated benefits more equitable.

Moreover, the paper investigates the role of transaction costs in relation to land use. Given the large land use requirements, and that renewable energy production tends to be a long-term affair, land use rights may be necessary. Furthermore, transactions related to renewable energy production depend on the features of the location involved, including the geography of a wind energy project location. It could be argued that transaction costs related to land use for renewable energy production may be related to the need to maintain relationships with the respective communities; for example, onshore windfarms may first need to be allowed by the community to operate. Otherwise, organizations that own such windfarms end up having infrastructure and equipment that are costly for the cooperative to move around outside the location; there are assets specific to transactions related to energy systems. The latter are perceived to have high levels of asset specificity compared to those in fossil fuels (Hvelplund et al., 2019; Signorini, 2015), limiting the extent of renewable energy deployment (Kim & Park, 2016). In cooperatives, owners are also the customers, which increase the likelihood of trust (Ollila, 2009). This strengthens the relationship between cooperatives and communities, helping cooperatives gain property rights for renewable energy production. Relationships being more based on trust should be able to reduce bargaining costs associated with the respective transactions and policing and enforcement costs after the resulting agreement is drafted. Additionally, cooperatives tend to arise more naturally from grassroots efforts, making them more acquainted with the specific

circumstances of the communities from which they arise, which allows them to be more suited to such circumstances (Bauwens, 2017; Mancino & Thomas, 2005). Specialized arrangements based on specific circumstances can likewise be built to deal with specific governance and coordination requirements of the related transactions. These specialized arrangements are expected to be better in handling such transactions; these arrangements would require addressing fewer aspects of a transaction, reducing the associated information costs. Therefore, another proposition is that renewable energy cooperatives help in the proliferation of renewable energy by addressing transaction costs associated with renewable energy production.

To recapitulate, the main foci are:

1. Renewable energy cooperatives directly help in renewable energy proliferation in Europe (a) by being a suitable organizational form to develop and manage renewable energy systems at the community level, through (b) the desire to democratize the energy sector, and (c) by making the distribution of benefits more equitable in the context of REScoop.eu.
2. Renewable energy cooperatives do this by addressing the transaction costs associated with renewable energy production in the context of REScoop.eu.

III. Qualitative Research Design

The respective study was undertaken using qualitative research methods for the following reasons. First, institutional forms tend to be complex systems. Neoclassical microeconomic models tend to disregard such complexity, having oversimplifying assumptions about economic behavior, exemplified in the treatment of the firm as a "black box", the epitome of non-institutional analysis (Williamson, 1985). Qualitative research can address this limitation and flesh out crucial details about institutions by extracting more in-depth information (Sovacool et al., 2018).

Second, there are aspects of this complexity that are difficult to quantify, like trust, power, or equity. Such cannot be taken into account by neoclassical models, as demonstrated by public goods game experiment results (Bardsley, 2000). Third, phenomena and context can be difficult to distinguish in real-world settings (Yin, 2018), and a qualitative approach is useful when investigating the contextual conditions under which a real-world phenomenon should be understood.

1. Interviews, Thematic Analysis, and Survey

The following describes how the research questions are tackled. The first stage involves semi-structured online interviews. Interviews can provide a more detailed understanding of the topic through follow up questions. This is to obtain data from which themes can be derived to construct a narrative that addresses the research questions specified. Interviewees were chosen based on two main considerations, representing the sampling approach used. One consideration is the extent of involvement in the actual development of renewable energy cooperatives within REScoop.eu. The respective interviewees were those chosen by the respondent REScoop.eu member cooperatives to represent them, such as presidents, directors, and board members. Interviewees expressed personal views, not necessarily those of the cooperatives. Interviewees were from two main types REScoop.eu member cooperatives, including the smaller, county- or municipal-level cooperatives, and the larger, national-level cooperatives. There were also interviewees from cooperative federations or intermediary organizations within REScoop.eu, meaning organizations involved in the development of community-based cooperatives, where a representative from REScoop.eu itself was included. The other consideration is the extent to which a perspective from outside REScoop.eu can be obtained, including those not REScoop.eu members. These interviews act as additional lines of sight to further improve insights. The interviews were semi-structured to allow for more freedom as

to how the conversation progresses, as to not limit the way insights on a topic are brought up.

The second stage involves using the thematic analysis method outlined in Braun and Clarke (2006). The themes identified were used to describe and organize the dataset, as well as to interpret the latter in relation to the research questions described. The interviews were done to construct a narrative to understand renewable energy proliferation in Europe toward a cleaner energy mix through renewable energy cooperatives in the context of REScoop.eu and the prevailing policy environment. The study likewise involves testing whether the theoretical bases for this proposition hold in the context of REScoop.eu. The narrative themes arising from the interviews were compared to patterns predicted by the respective theoretical bases, akin to the technique of pattern matching in linking data to propositions (Villamayor-Tomas et al., 2016; Yin, 2018). The third stage involves an online survey based on the narrative constructed from the thematic analysis. This is to obtain data that complement those from the interviews, to allow data from a larger sample, and for more standardized questions to be asked. The online interviews were used as basis for the latter through the results of the thematic analysis. The interviewees then also act as key informants for this online survey, providing the data necessary to craft the corresponding questionnaire. Therefore, relative to the survey, the interviews through the results of the thematic analysis can also be seen as a preliminary data gathering stage to identify which questions to include in the respective questionnaire. The main themes identified from the thematic analysis comprise the central perspective around which the survey is organized. The response options in the questionnaire reflect the narrative wherein the main themes were discussed. The online questionnaire was crafted using Qualtrics, and was sent via email or contact form to REScoop.eu member cooperatives as of July 6th, 2022. The survey was also presented as seeking the personal views of the respondents, and responding to the survey was entirely voluntary.

2. Respondent Characteristics

The interviewees came from four main types of organizations: (a) county- or municipal-level cooperatives, (b) national-level cooperatives, (c) cooperative federations and intermediary organizations, and (d) non-cooperative, non-REScoop.eu member organizations. Interviews were anonymized using alphanumeric identifiers based on these four main types, and grouped together by assigning Roman letters as identifiers. The identifiers are listed below.

A – County/municipal-level cooperative
B – National-level cooperative
C – Cooperative federations/intermediary organization
D – Non-REScoop.eu member organization

Hence, interviews involving county- or municipal-level cooperatives were labeled A, national-level cooperatives were labeled B, and so on. The interviews were also assigned Hindu-Arabic numerals based on the chronological order the interviews were taken, with the first interview chronologically in the group composed of county- or municipal-level cooperatives labeled A1, the second A2, and so on. There were 18 interviews conducted in total: five interviewees each were from the county- or municipal-level and national-level cooperatives, and four each were from the cooperative federations/intermediary organizations and non-cooperative, non-REScoop.eu member organizations.

The online survey had a low response rate with 32 respondents. The respective results were treated as qualitative data, complementing the online interview results. Fig. 1 shows some respondent information. The bulk of the respondents are from Spain, and most respondents are from individual cooperatives. Meanwhile, 22 respondents are from regional- or national- level cooperatives. More information is in Fig. 2. Most respondents are from cooperatives that produce solar energy. Energy production and support services, including consultancy or research, are the two

most frequently cited activities of the respondent cooperatives. Furthermore, 31 respondents come from cooperatives where members are individual citizens.

IV. Results and Discussion

There were further criteria used to identify the general themes. First is how such themes relate to and address the research questions in the context of REScoop.eu. Second is how frequently they were brought up in the interviews, which indicates how important such themes are from the perspective of the interviewees, and likewise gives an idea of how consistent such themes are across the interviews conducted. Third is how perspective provides details in the issues that arise and are related to the research questions, providing corresponding novel insights. Fourth is how appropriately they fit with an internally consistent overarching narrative that best reflects the qualitative data.

Fig. 1. Selected Respondent Information
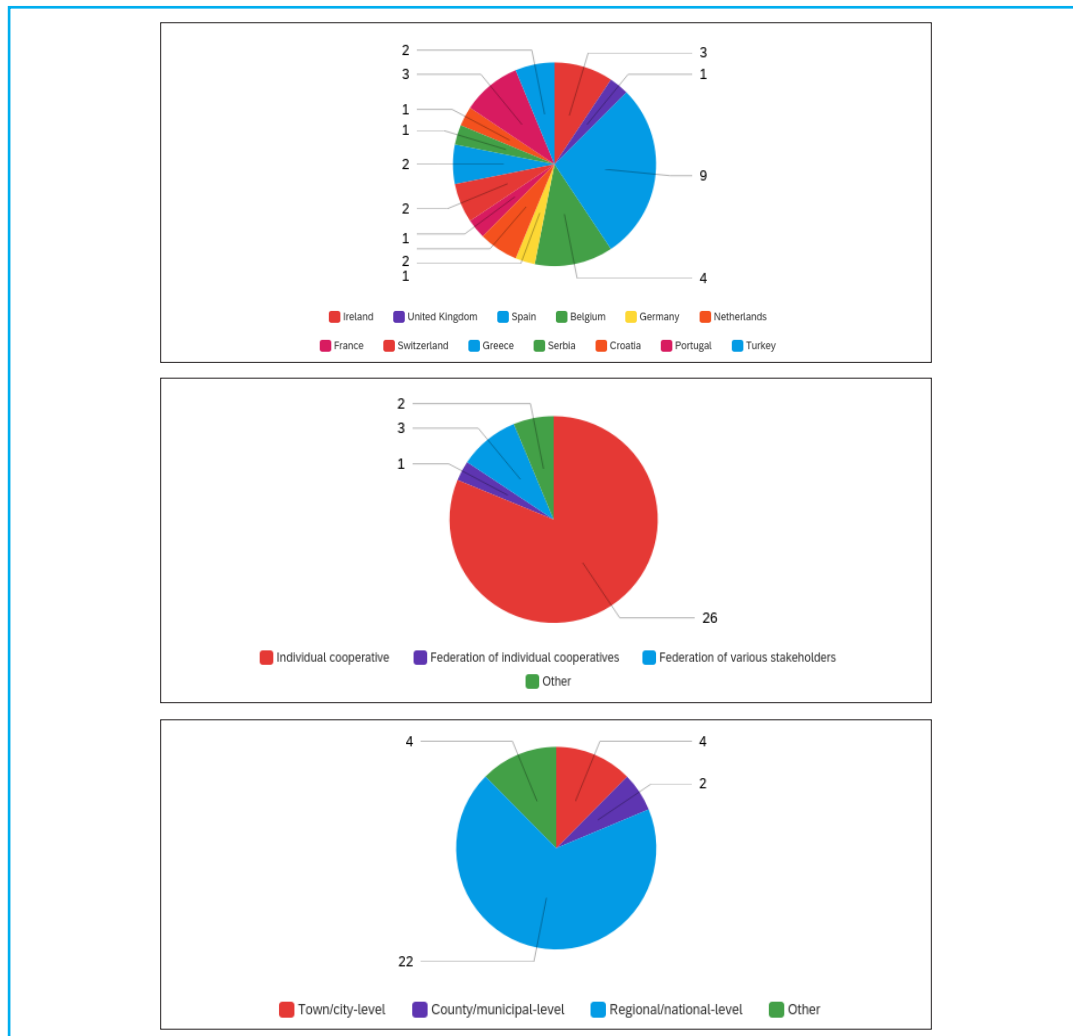
Fig. 2. Selected Respondents Information (Continued)

Source: Author using Qualtrics.

1. Theme 1: Politics, History, and Geography

The first theme is the set of issues relating to politics, history, and geography. These make up the exogenous environment upon which the ability of renewable energy cooperatives to influence the proliferation of renewable energy in Europe is embedded. These largely represent the social embeddedness level of social analysis (Williamson, 2000). First, the level of politicization of environmental issues matters, as political support for cooperatives can be obtained from political movements advocating renewable energy to address climate change. Second, cooperatives by municipalities hardly consider the

interests of the people. Municipalities themselves are not seen to be democratic at all to begin with, only representing the interest of a few individuals. Survey respondents gave almost unanimous support, with only one respondent choosing to disagree. Therefore, even for more developed of Europe, the formal rules in the institutional environment may not work the way they are intended to be because of problems in the social embeddedness level. The prevailing institutional environment therefore is only as good as the ethical and behavioral norms from which such institutions arise.

Third, there is a perception that bigger market players influence the actions of the government regarding energy decarbonization. For instance,

Fig. 3. Reasons for Starting a Cooperative
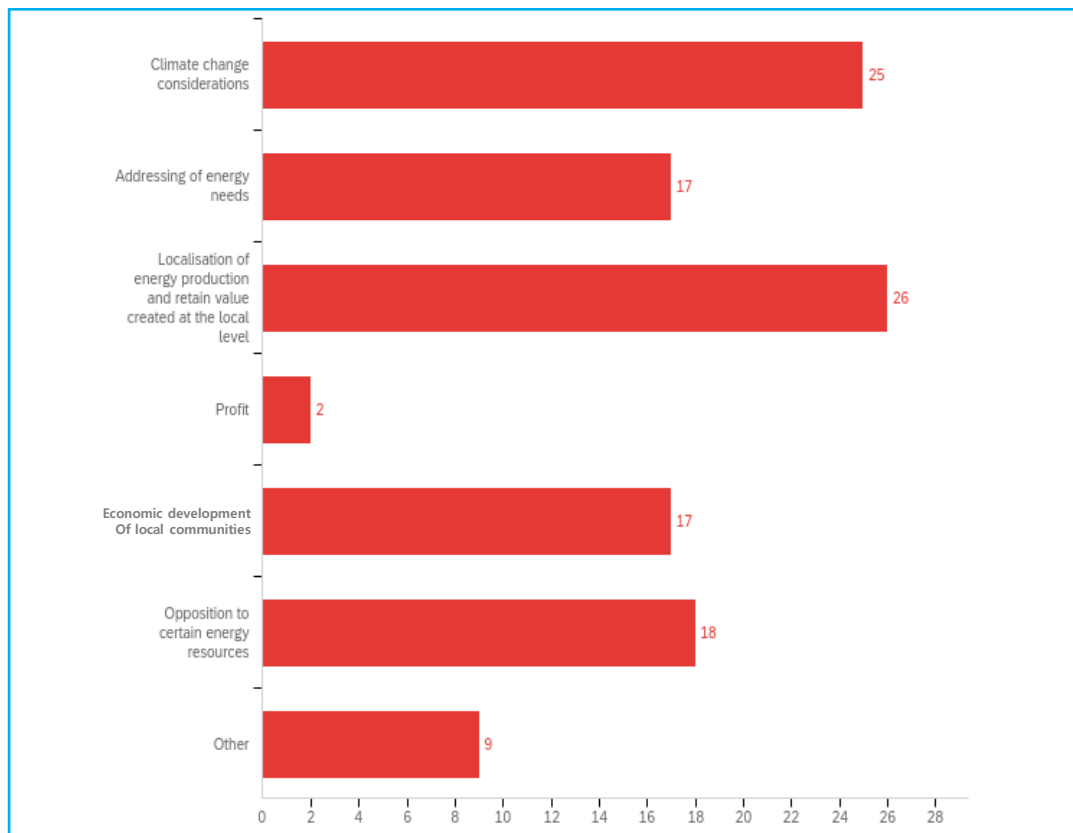
Source: Author using Qualtrics.

the interviews pointed out that politicians tend to consider only personal interests, such as privatizing government owned companies for profits, leading to monopolistic markets and lack of focus on green energy production. Fourth, cooperatives can be used as political pieces. For instance, renewable energy cooperatives that allow communities to produce energy locally make the respective countries less dependent on energy imports from countries that have political views that oppose their countries, such as Russia or Saudi Arabia. Fifth, the rise of cooperatives is seen to have been influenced by the respective historical and geographical context. There are renewable energy cooperatives that came about amid energy crises like in 1973. Some renewable energy cooperatives rose as a reaction against nuclear power following the Chernobyl disaster and against gas from fracking, as shown in Fig. 3. In Belgium, some renewable energy cooperatives were formed in areas with difficult terrain, which offer insufficient incentives for private companies to profits. The same applies to areas that have limited grid connectivity, like in islands in the case of the UK. Last, the historical context could also have affected the current perception on cooperatives. For instance, in Portugal, the historical bad reputation of cooperatives contributed to a more positive view of cooperatives among the younger generations compared to those older. Likewise, in Eastern Europe, the word "cooperative" is still easily associated with communism, hence the term "energy community" is preferred.

2. Theme 2: Social Cohesion

The second theme is social cohesion. Cooperatives are generally seen as more trustworthy than other business models, to which all 32 respondents save one agreed, as shown in Fig. 4. One reason is that cooperatives are not seen as distant, anonymous organizations that only profit from energy respective contracts or investments, with little regard for the community. Cooperatives are also perceived to be transparent on the nature of the energy produced, to which

also 26 of the 32 respondents concurred.

Cooperatives are closer to people, having grassroots knowledge to better address their needs. The specialized arrangements remarked in Section 2 were never brought up in the interviews, leaving no evidence that transaction costs were reduced through specialized arrangements that, by hypothesis, rise in the presence of better grassroots knowledge. In fact, 18 of the 32 survey respondents reported their cooperative experiencing difficulties in dealing with

local communities (top-left panel in Fig. 5). It is interesting to note that of the 14 respondents that did not report having such difficulties, 11 were from larger scale, regional- or national-level cooperatives. A Fisher's exact test was then performed, the null hypothesis being that difficulties dealing with local communities have no association with operational scale. The test gives a two-tailed p-value of 0.45, which indicates a lack of association. These may imply that specialized arrangements based on grassroots knowledge have little to do with how local the scale of a cooperative is, that regional- or national-level cooperatives simply have access to better resources to deal the specific needs of the respective local community, or both. Cooperatives likewise provide incentives for people to learn how to act as a group and make collective decisions to see the needs of the immediate community more clearly and engage in other activities that directly benefit it, something that is unlikely to happen in profit-driven business models. For example, one group of cooperatives in Belgium reinvested earnings into refurbishing an old bar. The people then had a completely new bar for concerts and other of social activities.

3. Theme 3: Lack of Efficiency

The third theme is lack of efficiency. This is in the sense that internal transaction costs pervade cooperatives, which leads to cooperatives being perceived as less suitable in developing and managing energy systems at the community level than other business models. While a few renewable energy cooperatives have their own

Fig. 4. Why Cooperatives Are More Trustworthy than Private Businesses
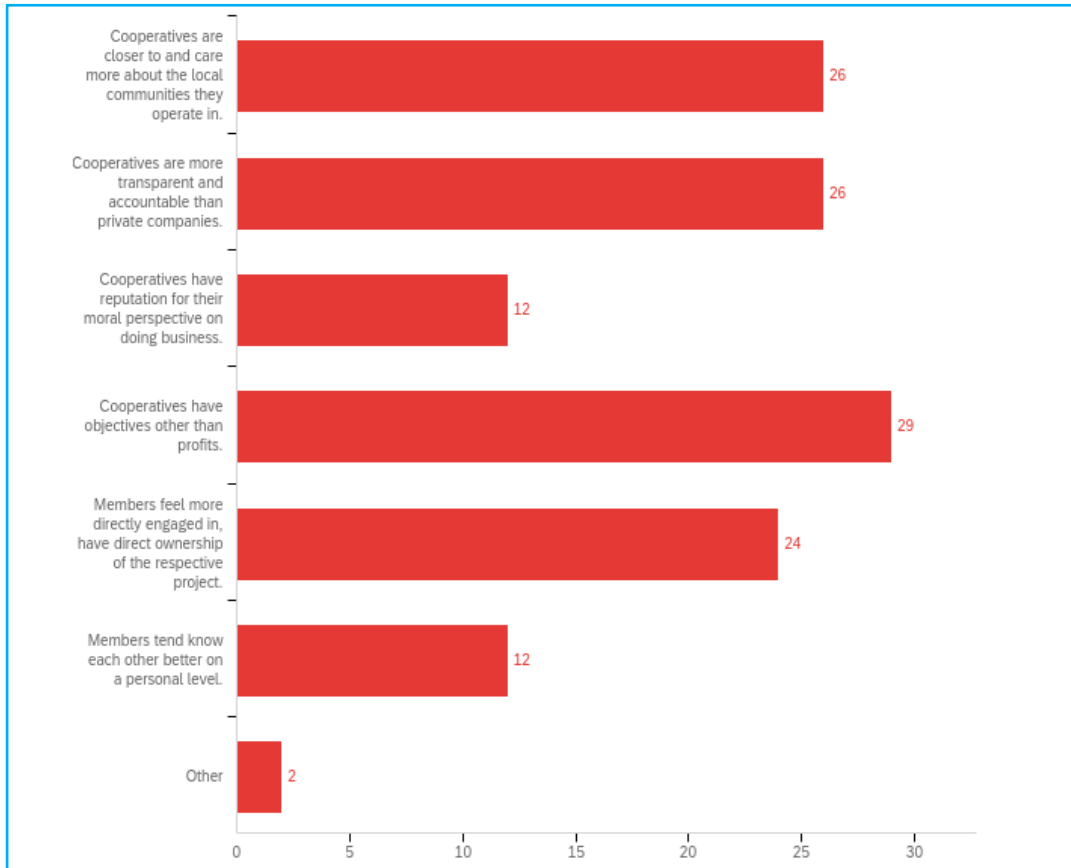
Source: Author using Qualtrics.

research and development capabilities, they generally have difficulty securing enough of the professional and technical expertise needed for operations, especially those smaller. Of the 32 survey respondents, 20 concurred, as shown in Fig. 5 (top-right panel). This even includes 13 of the 22 respondents from the larger scale, regional- and national-level cooperatives. The respective Fisher's exact test also indicated no evidence of association between lack of expertise and cooperative size (two-tailed p-value of 0.7). Cooperatives often have a reputation of being unprofessional and not well-organized, and are perceived to be less efficient than other business models in developing and managing renewable energy projects. The

lack of human capital in cooperatives leads to higher transaction costs: the necessary technical knowledge, especially in handling infrastructure and equipment, needs to be outsourced. The respective transactions have their own risks and difficulties, like expensive energy project materials and maintenance costs.

There are other difficulties, which include the lack of people engaged in full time work, with operations being purely based on volunteer work. Volunteers have jobs outside the cooperative, which constrains time, slowing down cooperative progress, and are described as being "time poor". This also makes it difficult to reach people from lower income groups, leading to cooperatives

being less inclusive. The survey results support this claim to some degree; of the 32 survey respondents, 21 agreed with this statement, though only 11 of these 21 agreed that this was indeed because activities within cooperatives leave less time to work for a living. It was widely acknowledged in the interviews that cooperatives are considered time-consuming, which decrease the time for personal matters. This was supported by 18 of the 32 respondents.

The democratic decision-making process in cooperatives also contributes to this lack of efficiency, as it takes longer to make decisions and actions compared to other business models, also implying higher transaction costs in making decisions, such as higher bargaining costs internal to the cooperative. Cooperatives are expected to represent the perspectives of the members, which need to be incorporated in the terms, attested to by 20 of the 32 respondents. This further contributes to the transaction costs associated with outsourcing, including the bargaining costs of negotiations and enforcement costs of these contracts. However, REScoop.eu members seem to value the fact that communities can be more directly and are actively involved, so they have more agency in transactions. Hence leading to the perception that a more democratic and participatory decision-making process is deemed more important than efficiency. However, not all survey respondents agreed; 11 of the 32 disagreed.

4. Theme 4: Democratization and Equity

The fourth theme is democratization and equity. In the online survey, only one respondent disagreed with the statement that renewable energy cooperatives contribute to the economic development of the local communities in which they operate. Important incentives for the existence of renewable energy cooperatives are the associated economic advantages, meaning the reduction of electricity prices and costs of related services. This was seen by the survey respondents as significant way cooperatives improve their respective local economies, as shown in Fig. 6.

Individual members can also benefit economically in terms of dividends earned that are distributed fairly. One added benefit from cooperatives, as raised in the online survey, were collective installation purchases, noted as an important activity of cooperatives by some respondents. This essentially pools investment risks among members, as the latter make investments collectively (Ollila, 2009). The survey respondents almost unanimously agreed with the claim that renewable energy cooperatives make the distribution of benefits from renewable energy exploitation more equitable, with only one respondent disagreeing with the statement. One survey respondent identified the promotion of women entrepreneurship as a reason for the cooperative's existence. In addition, a good crowdfunding campaign to raise sufficient funds helps. Also brought up was the notion of "cooperative porosity", which was explained as "things come in from community and things go out to community" (A4). In other words, there are reciprocal returns that move between the cooperative and the community.

Renewable energy cooperatives democratize the energy sector mainly by stimulating the local economy and localizing energy production. An interviewee mentioned that one main driver for the rise of renewable energy cooperatives is that people "just want to have a sustainable

income for local development" (D4). Direct ownership gives people some degree of influence on how the respective energy project is developed and managed, along with allowing them to directly benefit. In the first place, localizing energy production reduces the associated transmission costs, as electricity needs to be transmitted over shorter distances. When local communities have access to their own energy through cooperatives, the returns on own investment can stay in the community, and can be seen to lead to economic development. This can be achieved by reinvesting the returns in other projects that directly help the community, identified in the survey as a way cooperatives can contribute to the economic development of local economies most frequently, as seen in Fig. 6. This is expected to create or boost

Fig. 5. Selected Statements to which Respondents Agreed or Disagreed

Source: Author using Qualtrics.

the local supply chain, which in turn emphasizes the use of local resources for the local energy project, generates local employment, and engages in business more frequently with local enterprises. The generation of local employment and greater engagement with local enterprises were also identified in the survey relatively frequently, and further magnified by cooperatives reducing electricity costs in the local community. Through the cooperatives' participatory and democratic nature, those involved can collectively decide on what prices to pay, leading to cheaper electricity. The value created is retained at the local level, to which one interviewee referred to as "energy democracy" (B3). It was also explicitly mentioned by some survey respondents that one reason for the cooperative's existence was to gain energy independence from the big energy firms mentioned in Koirala et al.

Fig. 6. How Cooperatives Contribute to Economic Development

Source: Author using Qualtrics.

(2018), along with getting around oligopolistic markets, as raised in Huybrechts and Mertens (2014). The energy transition to address climate change is seen to only succeed if it leads to such energy democracy, wherein the benefits from the energy project "stay as local as possible" (B3), such that there is connection "between the goals of energy transition and the local community" (A5).

Renewable energy cooperatives nonetheless are not seen to provide total localization of energy

production; grid connection is still necessary for a stable energy supply. Better grid connectivity makes such energy production localization less of an issue. Grid saturation is a problem, along with backlogs in installing new capacity in the infrastructure, the latter being insufficient to support local renewable energy initiatives, and the technical difficulties associated with connectivity. One survey respondent also raised economies of scale concerning grid connection costs as a problem. The most pressing concern, however, was the set of regulations and an infrastructure setup that makes self-consumption more difficult. More specifically, it is more difficult for communities to provide themselves with the electricity they themselves generate, as it is less costly to transmit electricity generated back to the grid directly and sell such electricity through the grid. In Turkey, as brought up in the survey, cooperatives are required by law to sell electricity to members only through the grid. Also brought up in the survey was that in Spain, grid distribution is monopolized. Not all survey respondents agreed that grid connection is a problem; only 25 of the 32 respondents noted the issue. One that disagreed noted that their cooperative has a virtual power plant run through a system that models prices, energy flows, and weather conditions, which solves grid problems. Furthermore, the interviews show that renewable energy cooperatives arise because of environmental concerns, such as addressing climate change by substituting renewables for fossil fuels. People form or join cooperatives because of the legitimate desire for an energy substitution away from fossil fuels to address climate change, as shown in Fig. 3. People involved are more willing to participate in addressing climate change because they feel more personally connected to and directly involved in the energy project, as well as to the overall energy transition. This claim was unanimously agreed upon by survey respondents. Renewable energy cooperatives then are seen as able to engage people in the energy transition required to address climate change and help in the proliferation of renewable energy in Europe by making distribution of the

associated benefits more equitable.

5. Theme 5: Local Acceptance of Renewables

The fifth theme is that cooperatives are seen to influence renewable energy proliferation by improving the local acceptance of renewables. Almost all survey respondents agreed with this, with only two choosing to disagree. Local communities themselves own the renewable energy projects and are engaged in the latter's development and management. The local community then benefit directly from the renewable energy projects installed in its location, wherein people benefit from their own investment by directly netting consumption from their own production. Such direct benefits for the community make the local acceptance of renewable energy more likely to happen compared to other business models. Because locals benefit directly, they are incentivized to invest in such projects. In REScoop.eu, those involved in cooperatives have a sense of pride and empowerment from directly and personally participating in the energy transition to address climate change in doing something concrete about climate change. Because renewable energy cooperatives increase the local acceptance of renewables, they help in enhancing the deployment of renewables in Europe.

6. Theme 6: The Cooperative Organizational Form

The sixth theme is the set of issues relating to the cooperative organizational form. There are nuances as far as the degree to which the cooperative organizational form is necessary when it comes to achieving these goals. In the first place, there is a perception is that "what truly makes [one] a cooperative is the way [they] do business, regardless of the legal form" (C1). A cooperative is a group of citizens that set up a legal form to organize or structure activities around doing something beneficial for society wherein profits is not prioritized. There are countries wherein

the legal form of a cooperative does not even exist. For example, Denmark technically does not technically have the cooperative as a legal form. The country has the "non-profit association" as a legal form, which works identically as a cooperative. Also, an interviewee brought up that smaller private companies would also want fairer distribution, and would want to distribute profits to make projects, and hence share projects with renewable energy cooperatives. Private companies are themselves members of cooperatives, as depicted in Fig. 1. Small and medium enterprises, or SMEs, on numerous occasions in the interviews were identified to have crucial roles in the proliferation of renewable energy in Europe. There were two respondents are from a cooperative that has SMEs as members, along with citizens and other social entities, are given opportunities to participate in the energy sector, and the renewable energy transition was also one of the reasons cited in the survey for starting the cooperative. In the survey, however, three quarters of the respondents agreed with the statement that private companies would have a difficult time adopting the ICA principles in doing business. When asked which of the ICA principles private companies would have a difficult time adopting, the survey respondents identified democratic control and equitable economic participation most frequently. In relation to this, one respondent noted that because of its organizational form and the way it works, cooperatives are considered as "outsiders", meaning that cooperatives are still not mainstream actors as far as renewable proliferation in Europe is concerned.

It was also brought up that there are cooperatives in legal form that are undemocratic and non-inclusive, like those set up by private and government-owned companies that only allow for limited participation. Cooperatives have also been seen as "private investors' clubs", wherein the shares are expensive, and hence only those relatively wealthy can participate, limiting cooperative activity in relatively wealthy communities. Most survey respondents disagreed, however (17 of the 32 respondents). Ten agreed that private companies

will have a difficult time adopting ICA principles. A respective Fisher's exact test was performed to see if there was an association. The Fisher's exact test gave a two-tailed p-value of 0.04, implying a statistically significant association. The Spearman's rho and Kendall's tau-b coefficients were 0.4 and 0.4, respectively, with p-values of 0.02 and 0.02, respectively. This may imply that respondents generally hold cooperatives to high standards, and that truly complying with cooperative principles is generally difficult to achieve. It could be argued that while cooperatives are viewed quite distinctively from other organizations in the REScoop.eu interviews, there seems to be a lack of attribution of this perceived uniqueness of cooperatives to the legal form. It seems that while the advantages of cooperatives were brought up in the interviews, even those directly related to renewable proliferation in Europe, the interviewees did not seem to view these advantages as being generated by the legal form. There seems to be a disconnect between the perceived beneficial characteristics of cooperatives and the legal form. There seems to be, therefore, a puzzle in these interviews, in that the perceived uniqueness of cooperatives in the interviews contrasts with what was said about the legal form.

7. Theme 7: Land Use

The seventh theme is land use. The cooperative legal form seems to be seen as of minor importance when addressing land use issues. Dealing with such land use issues are enshrined in national spatial planning regimes and procedures, something to which the REScoop.eu interviewees largely alluded. Thus, addressing land use issues depends on what has been specified in the law more than on the legal form of cooperatives. Land use issues also seem to be solved by prevailing technology and good land use designs and practices, including agrivoltaics, installing solar PVs on roofs instead of on agriculturally active pieces of land, or permaculture practices. Hence, land use property rights need not be adjusted when conflicts arise.

As seen in Fig. 7, improving the local acceptance of renewables was most frequently identified way to deal with land use issues (20 of the 32 respondents), consistent with the interviews. As renewable energy cooperatives make renewables more locally acceptable, the land use property rights regime should be expected to be more in favor of renewable energy projects, the latter being allowed to operate by the communities in the respective locations. In a particular case in the Netherlands, there is a perceived fierce competition over land ownership. One implication is that the value of the related infrastructure and equipment in that specific location then become realized, which would have been significantly less valuable elsewhere because of high asset specificity.

Furthermore, cooperatives help address land use issues by facilitating dialogues with the local community by having better relationships with it to bring its interests to the forefront of the spatial planning regime, the second most frequently identified way cooperatives deal with land use. Such dialogues can lead to the creation of a land use property rights regime in favor of renewable energy production, or to adjustments in the property rights as defined by the existing spatial planning regime. This can happen if citizens are involved in public consultations. Further, such dialogues incur additional transactions costs, particularly bargaining costs during the

Fig. 7. Addressing Land Use Issues

Source: Author using Qualtrics.

dialogues. These transaction costs can be mitigated by cooperatives being more trustworthy than other business models, as established in Section 4.2. Greater local acceptance of renewables and the facilitation of dialogues are viewed as advantages of cooperatives in relation to renewable energy proliferation in Europe, but these are not seen as derivatives of the respective legal form. This corroborates the claim made in Section 4.6, that in the context of REScoop.eu, the perceived beneficial characteristics of cooperatives have nothing to do with the legal form itself; the perceived distinctiveness of cooperatives contrasts with claims made on the legal form.

8. Theme 8: Support Mechanisms

The eighth theme is support mechanisms. There is a perception that renewable energy cooperatives still have quite a small impact in renewable energy proliferation in Europe, and given this, it has been consistently brought up that adequate legal and policy frameworks are crucial for enabling renewable energy cooperatives to be successful in aiding renewable energy proliferation in Europe. In the first place, adopting the European Renewable Energy Directive Recast, or RED II, by all Member States is necessary, which requires adequate legal and policy frameworks. The next challenge is to make sure that Member States adopt the respective provisions in a way that are aligned with the actual intent of such provisions as envisioned by its drafters. Then, Member States create the enabling legal and policy frameworks at the national level that allow cooperatives to compete on equal grounds with bigger players. One policy recommendation is termed as a cooperative "bike lane", wherein protection is given to cooperatives when competing with bigger market players. Here, there are specific rules and measures put in place to allow cooperatives to compete with bigger players according to their principles. This was seen in the survey as important, as identified by half of the survey respondents (Fig. 8), and even directly pointed out by one respondent. It was noted that given enough scale, cooperatives can exert competitive pressures against larger players.

The interviews also pointed out that these legal and policy frameworks must consider the interests of the local and regional communities; otherwise, conflicts will arise, as was explained in the case of land use issues. Other perceived necessary policy measures include setting energy production targets at the hands of local actors, and the facilitation of power supply sharing among members or customers. The latter was identified by survey respondents most frequently, as Fig. 8 shows. In relation, survey respondents voiced the necessity of a more efficient bureaucracy to facilitate renewable energy projects development, wherein red tape is eliminated to make the participation of smaller actors easier. Generating funds for projects is a major difficulty for the cooperatives cited in the REScoop.eu interviews, hence policy measures on financing were deemed significant, such as grant programs for cooperatives, subsidies, and having a one-stop shop where cooperatives can reach out in cases where they

need support and financing to get projects off the ground. The communities where cooperatives operate are likewise seen to benefit from such financing. Regarding this, it was noted that cooperatives may not be the best choice for an organizational form in the presence of external funding. This is because investors provide funding to earn a return, and investors providing large sums of money in a project would not want to share equal bargaining power in the decision-making process, and 21 of the 32 respondents agreed in the questionnaire (bottom-left panel in Fig. 5). Here, a chi-square test was performed to see if there was an association between this claim and the tendency to value democratic decision-making more than profit. The chi-square test gave a p-value of 0.08, showing weak evidence of association.

V. Summary and Conclusions

The main findings are as follows. First, while cooperatives are viewed rather distinctly from other organizations, there is a lack of attribution

Fig. 8. Necessary Legislation on Renewable Energy Cooperatives

Source: Author using Qualtrics.

of this distinctiveness to the respective legal form. The perceived advantages to cooperatives were not seen as arising from the respective legal form. The prevailing legal and policy framework, along with political, historical, and geographical context in a country, are perceived to be more important factors in renewable energy proliferation than the cooperative legal form itself. Second, cooperative legal form was also not viewed to be important when addressing land use issues. Greater acceptance of renewables at the local level and facilitation of dialogues, along with the existing available technology, good land use designs and practices, and the prevailing related legal and policy framework, mattered more. Third, there is a perception that renewable energy cooperatives directly help in the proliferation of renewable energy in Europe through the democratization of the energy sector by localizing energy production and stimulating the local economy. This warrants the support mechanisms to incentivize the existence of renewable energy cooperatives in local areas, namely financing in the form of grant programs, subsidies, and one-stop support shops. Fourth, renewable energy cooperatives help renewable energy proliferation in Europe mainly by making renewables more acceptable at the local level, which is also how cooperatives help deal with land use issues. Therefore, there is indeed a perception that renewable energy cooperatives directly help in the proliferation of renewable energy in Europe through the democratization of the energy sector, and making the distribution of the associated benefits more equitable.

Fifth, cooperatives help in the proliferation of renewable energy by building relationships based on trust, and tend to have better grassroots knowledge. These, however, do not seem to lead to the rise of specialized arrangements to specifically deal with transactions to reduce transaction costs, and there is no evidence that such transaction costs are reduced through better grassroots knowledge. Last, cooperatives are hampered by the general lack of corresponding professional and technical expertise, which must be outsourced. Another related issue is that cooperatives are mostly run by volunteers. It would then be helpful to have mechanisms that make cooperative membership financially more viable: more specifically, mechanisms that circumvent expensive cooperative shares to encourage the cooperative membership, including those in lower income levels. Furthermore, certain legal and policy measures should also be in place to see to it that cooperatives indeed are functioning in a democratic and inclusive way. The democratic decision-making process incurs higher bargaining costs, which makes cooperatives less efficient in developing and managing renewable energy systems than other business models. These entail internal additional transaction costs for cooperatives. As a last point, the corresponding third, fourth, and fifth findings

imply that localization is key for renewable energy cooperatives to be significant drivers of renewable energy in Europe. It is likewise noteworthy that this study highlights the failures of governments to represent the interests of their people and be independent from the influence of big energy players. This means that prevailing institutions are only as good as the ethical and behavioral norms from which they arise. Another set of issues related to the localization of renewable energy production is related to the grid. There is then mixed evidence both for the first and second propositions raised in Section 2.

One important outcome is that the respective investigation of cooperatives has led to a puzzle; there seems to be a lack of attribution of the advantages to cooperatives in renewable energy proliferation. This appears to imply that the distinct characteristics of cooperatives are perceived to have little connection to the legal form. If this is the case, why then do other organizations, say private companies, behave differently? If such advantages to cooperatives are not attributable to the legal form, then an explanation of the differences in the behaviors of other organizations must be found. Future study in relation to cooperatives can be driven by this puzzle.

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The Effect of Conspicuous Consumption on Consumer Purchase Intention: The Mediating Role of Perceived Value*

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ABSTRACT

Purpose – The rapid recent growth of China's economy and the emergence of a global consumer culture have increased conspicuous consumption among Chinese consumers. This research investigates how conspicuous consumption influences Chinese consumers' purchase intentions toward global brands as mediated by perceived brand value.

Design/Methodology/Approach – Data were collected through the conduct of a survey among Chinese consumers. The PROCESS Macro model was used to test the mediating effects of perceived functional, social, and emotional value.

Findings – The study found that Chinese consumers with conspicuous consumption tendencies possess positive purchase intentions toward global brands. Study 1 indicated that consumers' perceived social and emotional value mediates the relationship between conspicuous consumption and purchase intention for hedonic products. For utilitarian products, Study 2 showed that the relationship is mediated by consumers' perceived functional and emotional value. Perceived emotional value plays a critical role in the relationship between conspicuous consumption and purchase intention for both product types.

Research Implications – This study contributes to the scarce literature about the positive relationship between conspicuous consumption and global brands in emerging markets. Marketing strategies in emerging markets should concentrate on status-related consumption and market segmentation. These findings are expected to contribute to international marketing and global brand management, providing valuable insights into the purchasing motives of consumers for global brands.

Keywords: conspicuous consumption, purchase intention, perceived value, global brands, hedonic, utilitarian
JEL Classifications: C12, F14, L60

I. Introduction

With the rapid expansion of economic globalization, developed countries have invested in emerging markets and promoted global brands (Buckley, 2009). A global brand is defined as "a brand that uses the same name and logo, values, strategic position and marketing strategy, and is accepted in multiple countries and regions" (Özsomer & Altaras, 2008). According to existing research, global brands are considered high quality, prestigious (Hussein & Hassan, 2018), and a symbol of international status (Holt et al., 2004).

Consumers' consumption behavior is often closely related to social relationships and the consumer's external environment (Lee & Yang, 2022; Somogyi et al., 2011). People like to display their status and wealth through various forms of conspicuous consumption (O'Cass & McEwen, 2004). For consumers in emerging markets in particular, global brands represent high quality, modernity, and affluence (Zhang & Zhang, 2023). Such consumers with a tendency toward conspicuous consumption hope to acquire status and identity by purchasing global brands. Convergence theory suggests that, influenced by globalization, consumers in emerging markets imitate the consumption behaviors in developed markets (Dholakia & Talukdar, 2004). By purchasing global or Western brands, consumers can participate in global culture and acquire a global identity (Holt et al., 2004) that demonstrates their belonging to certain groups, such as the cosmopolitanism (Alden et al., 1999). In other words, consumers choose global brands not solely based on product quality but also to communicate social signals.

Consumption is an essential means of satisfying consumers' economic and psychological needs (Jackson & Marks, 1999). Recently, consumers have been increasingly attracted to visible symbolic purchases, driven by the rise of social media (Akturan & Bozbay, 2018). This desire to convey status and respect by purchasing visually striking products or services is "conspicuous consumption" (Veblen, 1899). Veblen (1899) emphasized that people from all social strata compare themselves to others and imitate the lifestyle of a higher social class, implying that conspicuous consumption is common across all social classes, especially in emerging countries with wide income disparities and high social mobility. Conspicuous consumers readily purchase symbolic brands to meet their psychological needs (Chen et al., 2022). The high quality and prestigious image of a global brand may motivate these consumers to enhance their self-esteem and status by purchasing from the brand.

This study focuses on the Chinese market. China's economy has greatly improved over the past two decades, resulting in a significant expansion of the middle class (Sicular et al., 2022; Xiong, 2022). The emerging middle class aspires to showcase tangible evidence of their wealth and status through purchases. Chinese consumers are expected to pay greater attention to hedonic, conspicuous, and symbolic consumption in the future (Wang & Griskevicius, 2014). Therefore, this study explores the purchase intentions of Chinese conspicuous consumers toward global brands.

Previous research has demonstrated a positive relationship between conspicuous consumption and global brand purchase intentions (Akturan & Bozbay, 2018), but the applicability of this observation to different product types (hedonic versus utilitarian) warrants further discussion. The current literature is limited in its understanding of how conspicuous consumption tendencies affect purchase intentions toward global brands through perceived brand value. Perceived value represents a consumer's assessed total value of a purchased product or service (Sweeney & Soutar, 2001). Baek et al. (2020) suggest that consumers are more loyal to and satisfied with a brand perceived to be high value. This study investigates the mediating effects of perceived functional, social, and emotional value on the purchase intentions toward different types of products. The findings of this study provide valuable implications for international brand managers in emerging markets. Global brand managers should consider the impact of conspicuous consumption and perceived value on purchase intention.

II. Literature Review

1. Conspicuous Consumption

The concept of conspicuous consumption was initially proposed by Veblen (1899) in his book The Theory of Leisure Class. He emphasized that conspicuous consumption is the act of demonstrating wealth and social status through purchases rather than using goods for their intended purposes. Conspicuous consumption depends not only on the actual level of spending but also on spending compared to others (Duesenberry, 1949). According to Belk (1988), conspicuous consumption is acquisitive and appropriative behavior as a form of self-expression. Consumers with conspicuous consumption tendencies intentionally purchase products and services to display to others as a means of fulfilling their internal needs, showcasing their social status, or fostering a sense of belonging to a particular group (Roy Chaudhuri et al., 2011). Conspicuous consumption has always been considered irrational (Shukla, 2008), thus previous research investigating conspicuous consumption has focused on the consumption of luxury goods by affluent consumers with higher incomes (Bachmann et al., 2019; Yin & Yang, 2021), where price is not their primary concern. Such consumers are more focused on deriving intangible values from products and brands, such as a sense of belonging, self-expression, emotional connection, and perceived financial status (Shukla, 2008; Tran & Kim, 2022). Consumers in emerging markets with a tendency to consume conspicuously reflect their social status by purchasing global brands (Areiza-Padilla & Manzi Puertas, 2021). Research has shown that this consumption is not only limited to the rich, people with limited financial resources also engage in it heavily (Huang & Wang, 2018). In sum, conspicuous consumption is consumption for symbolic purposes, whereby consumers attempt to express their self-image, social status, and group affiliation through conspicuous ownership of a product or brand.

Due to the expansion of globalization and the rise of consumerist culture, conspicuous consumption is now prominent in some emerging economies, especially in Asia (Huang & Wang, 2018). Batra et al. (2000) argue that consumers in emerging markets with greater income disparity and social mobility are more susceptible to peer pressure. They place significant emphasis on others' reactions to their behavior. Publicly owning luxury goods or global brands can bolster identity, enhance social status, and build relationships. For these consumers, global brands have a significant advantage in terms of awareness, perceived quality, and overall brand equity (Hussein & Hassan, 2018). Empirical evidence generally indicates that global brands possess higher value. Kinra (2006) shows that consumers in India believe that purchasing brands from developed countries, such as the United States or Germany, can enhance their social status. Global mass media, tourism, and cross-border trade have promoted an appreciation and preference for foreign products among consumers in less affluent regions (Alden et al., 1999). As a result of exposure to global consumer culture, consumers in emerging markets tend to favor foreign brands even when local brands offer the equivalent functional attributes (Mason, 1984). This preference can be attributed to the broader acceptance of foreign brands' images, which carry emotional utility and are perceived to be more aligned with global trends and lifestyles (Lysonski, 2014).

In the Chinese cultural context, the concept of "face" has a pivotal influence on consumer behavior (Mi et al., 2018). Rooted in a highly collectivist culture, Chinese consumers place immense importance on the opinions and perceptions of others (Yang, 1981) and aim to project a positive public self-image (Huang & Wang, 2018; Li, 2021). Due to China's improving economic situation, purchasing expensive foreign goods has become a significant opportunity for self-fulfillment and displaying wealth for China's growing middle class (Zhang, 2020). Publicly possessing foreign brands is crucial for expressing their identity and social status (Tan et al., 2022). Similar to consumers in

other developing countries, Chinese consumers perceive global brands to be more prestigious than local brands (Ling, 2013). They tend to purchase expensive global brands to evoke envy (Shan et al., 2016), as well as strengthen their ties with the global community and enhance their sense of international belonging (Zakaria et al., 2020). Possessing a global image can enhance Chinese consumers' social status and self-worth. Considering this, we predict the following:

H1: Conspicuous consumption positively influences consumer purchase intentions toward global brands.

2. Perceived Value

Value results from a cost-benefit analysis (Payne & Holt, 1999). Perceived value, on the other hand, is derived from consumers' evaluation of the utility of a brand or product (Zeithaml, 1988). Since value perception can occur without the purchase or use of a product or service (Sweeney & Soutar, 2001), it can be used as a prerequisite for a purchase decision. Previous research has demonstrated that perceived value influences consumers' brand attitudes (Yang et al., 2019), loyalty (Baek et al., 2020; Yeh et al., 2016), and purchase intentions (Cui & Im, 2021). The perceived value theory suggests that consumers make purchase decisions based on an overall assessment of the purchase's given and received components (Zeithaml, 1988). Since consumers' perceptions are influenced by their unique circumstances (Cooper, 1988), perceived value cannot be defined as a trade-off between price and quality (Sweeney & Soutar, 2001). Instead, consumers' choices are determined by multiple dimensions (Sheth et al., 1991), commonly encompassing perceived functional, social and emotional value (Sweeney & Soutar, 2001).

Perceived functional value is considered to be the utility derived from the perceived quality and expected performance of a product and is often cited as the most fundamental driver of consumer decisions (Sweeney & Soutar, 2001). Consumers

who prioritize functional value will be particularly concerned about the brand or product's quality. Perceived functional value is a crucial factor in predicting repeat purchases (Shukla & Purani, 2012) and consumer loyalty (Yeh et al., 2016). Negative perceptions of functional value often indicate a lack of consumer trust and loyalty in the brand (Baek et al., 2020; Erdem et al., 2006) and unwillingness to pay (Yang et al., 2018). Consumers in developing countries tend to evaluate global brands as credible and high quality, increasing purchase intentions (Swoboda et al., 2012). In contrast to individualists, collectivists primarily prioritize the functional value of products. Xiao and Kim (2009) demonstrated that Chinese consumers, influenced by strong collectivist values, emphasize products' functional value when deciding whether to purchase foreign products. Global brands commonly enjoy higher brand awareness and perceived quality, worth and status compared to local brand (Roy & Chau, 2011). Despite China's rapid economic growth, total resources remain relatively inadequate and unequal compared to developed countries. As a result, the average, Chinese consumer perceives global brands as superior in terms of quality, price, and durability (Wu & Delong, 2006). Global products are chosen not only for social reasons, but also because their high quality can fulfill consumers' functional needs (Xiao & Kim, 2009). Consumers seeking to express their identity and status through consumption consider global brands to have higher perceived functional value (Hudders et al., 2013) due to their standardized, high-quality production and worldwide recognition (Akram et al., 2011).

Perceived social value refers to the value a product provides by enhancing consumers' social self-concept (Sweeney & Soutar, 2001). Brand choice has social significance as people need to connect and maintain social relationships within their society (Cialdini & Goldstein, 2004). To maintain consistency with the value of social groups, consumers tend to make purchase decisions using group members' behavior as a frame of reference (Bearden et al., 1989). The

perceived social value of global brands influences consumers' personal attitudes, willingness to pay, and other behavioral intentions (Salehzadeh & Pool, 2017; Swoboda et al., 2012). For consumers in emerging markets especially (Akturan & Bozbay, 2018; Lloyd & Luk, 2010), global brands are a means of expressing social status and wealth (Batra et al., 2000). Naseem et al. (2015) argue that consumers with a preference for highly visible products are often driven by perceived social value. For example, consumers typically purchase luxury brands for prestige, status, and as symbols of wealth. Consumers with high levels of conspicuous consumption value the symbolic image of a brand (Wang et al., 2008) since it is essential for them to consume in a manner that is visible to others. The consumer's social image is portrayed through these visible brands that signify personal wealth, status, and prestige (O'Cass & McEwen, 2004). As previously noted, researchers have proposed that due to the increasing penetration of global brands in emerging countries and the proliferation of global consumer culture (Hannerz, 1990), conspicuous consumers gain social value by possessing these brands (Zhang, 2020).

Perceived emotional value refers to the value generated from the brand that can satisfy consumers' emotional or sensory needs (Sweeney & Soutar, 2001). It is typically associated with tangible and utilitarian products. For instance, consumers in developing countries are willing to buy global clothing brands for emotional satisfaction and enjoyment (Bhardwaj et al., 2011). Consumers' emotions affect their choice of brands (Holbrook & Hirschman, 1982), as people aspire to gain pleasure and satisfying sensory stimulation through brands (Durkalo, 2021; Lloyd & Luk, 2010). Turel et al. (2007) and Zheng and Kim (2022) assert that positive emotional perception is an important factor influencing behavioral intentions. Asshidin et al. (2016) report that purchase intentions towards global brands may be motivated by the desire to meet one's emotional needs. Those with conspicuous consumption tendencies prefer to satisfy their hedonistic and pleasurable needs by purchasing and owning

symbolic brands. In emerging countries with prevalent consumer cultures, consumers use foreign brands to show their financial capabilities and enjoyment of life (Kumar et al., 2009; Li et al., 2012). A study in China showed that global retail brands can attract consumers in emerging markets through their perceived functional, social, and emotional value (Swoboda et al., 2012). We propose that conspicuous consumption positively influences the purchase intentions of global brands through different perceived values. Thus, we predict the following:

H2a: Perceived functional value mediates the effect of conspicuous consumption on the purchase intention toward global brands.
H2b: Perceived social value mediates the effect of conspicuous consumption on the purchase intention toward global brands.
H2c: Perceived emotional value mediates the effect of conspicuous consumption on the purchase intention toward global brands.

III. Methodology

1. Sample and Data Collection

We conducted two experiments to evaluate the model. Study 1 concentrated on hedonic products, while Study 2 investigated utilitarian products. The framework, assumptions, and measures were the same. Dhar and Wertenbroch (2000) suggest that hedonic products offer more personal emotions, providing consumers with pleasure, relaxation, excitement, and enjoyment, whereas utilitarian products are usually functional and rational, generally related to personal needs, and less emotionally engaging. Consumers expect more emotional benefits and symbolic status from hedonic brands (Chen et al., 2019), and more functional and quality-related benefits from utilitarian brands (Sameeni et al., 2022; Sinha & Verma, 2020). We investigated whether there are differences in the models when exploring different product types.

Häagen-Dazs (HD) and Dyson (DS) were selected from a large pool of brands after discussions with a focus group of marketing scholars. Using the online survey tool Sojump, 692 (58.8% female) participants were randomly assigned to one of the two brands. The response rates for both brands (N_{HD}=336, N_{DS}=356) were almost equally distributed. The two samples were also demographically similar, enabling comparison between the groups (Table 1).

Table 1. Demographic Description

Characteristics		Study 1(HD)		Study 2(DS)	
		N	(%)	N	(%)
Gender	Female	200	59.5	207	58.1
	Male	136	40.5	149	41.9
Age (year)	< 18	32	9.5	17	4.8
	18- 25	144	42.9	205	57.6
	26- 30	142	42.3	81	22.8
	31- 40	11	3.3	39	11.0
	41- 50	4	1.2	11	3.1
	>50	3	0.9	3	0.8
Education	Middle School	2	0.6	3	0.8
	High School	17	5.1	22	6.2
	College	243	72.3	265	74.4
	Master	74	22.0	66	18.5
Income (RMB)	< R3000	41	12.2	58	16.3
	R3001- R6000	143	42.6	124	34.8
	R6001- R9000	81	24.1	84	23.6
	R9000- R12000	47	14.0	53	14.9
	>R12000	24	7.1	37	10.4
Total		336	100.0	356	100.0

2. Measures and Procedure

Participants were first asked to respond on a 3-item scale adapted from Steenkamp et al. (2003) to check how global the stimuli brands (HD and DS) are perceived to be. A t-test showed that the mean of both stimuli brands was significantly greater than four (M_{PBG-HD} = 5.730, SD = 0.943, t = 33.614, p<0.001; $M_{PBG - DS}$ = 5.390, SD = 1.103, t = 23.768, p <0.001), indicating that they were perceived to be global brands. Additionally, 8-item scales adapted from Voss et al. (2003) were used to check the hedonic and utilitarian attributes of the stimuli brands. The results show that HD

scored significantly higher for hedonic attributes while DS scored significantly higher for utilitarian attributes (M_{HED-HD} = 4.690, M_{UT-HD} = 3.745, t = 15.056, p < 0.001; M_{HED-DS} = 4.780 , M_{UT-HD} = 5.223, t = −8.562, p <0.001). The participants correctly viewed the two brands as utilitarian and hedonistic, implying a successful manipulation of product types.

In this study, all the items measured were obtained from previous literature, with minor adjustments to accommodate different linguistic and cultural contexts. Conspicuous consumption was measured using a 4-item scale from Marcoux et al. (1997) and Abraham and Reitman (2018). To measure the perceived values (functional, social, and emotional), we adopted four items per dimension from Sweeney and Soutar (2001). Global brand purchase intention was measured using a 3-item scale adapted from Dodds et al. (1991). Each item was measured on a 7-point Likert scale (ranging from strongly disagree to strongly agree).

Table 2. Construct Measurement

Items		Study 1 (HD)				Study 2 (DS)			
		FL	AVE	CR	α	FL	AVE	CR	α
Conspicuous Consumption (CC)	CC1	0.831				0.836			
	CC2	0.867				0.879			
	CC3	0.867	0.723	0.930	0.930	0.906	0.760	0.940	0.940
	CC4	0.887				0.913			
	CC5	0.796				0.831			
Perceived Functional Value (PFV)	PFV1	0.827				0.827			
	PFV2	0.887	0.710	0.910	0.910	0.887	0.680	0.890	0.890
	PFV3	0.779				0.779			
	PFV4	0.863				0.863			
Perceived Social Value (PSV)	PSV1	0.889				0.859			
	PSV2	0.905	0.780	0.930	0.930	0.925	0.790	0.940	0.940
	PSV3	0.871				0.866			
	PSV4	0.855				0.900			
Perceived Emotional Value (PEV)	PEV1	0.841				0.846			
	PEV2	0.866	0.710	0.910	0.910	0.792	0.670	0.890	0.890
	PEV3	0.828				0.837			
	PEV4	0.825				0.789			
Purchase Intention (PI)	PI1	0.793				0.790			
	PI2	0.863	0.690	0.870	0.870	0.883	0.690	0.870	0.860
	PI3	0.826				0.808			

3. Data Analysis

Harman's one-factor test was used to check for common method variance (Harman, 1976). The results show that both data sets had five factors with eigenvalues greater than one, with the first factor explaining the largest covariance of 45.4% and 44%, both below the 50% threshold (Fuller et al., 2016). A reliability, convergence, and discriminant validity assessment of the constructs and scales was conducted before the research model was tested. As shown in Table 2, in both datasets, the average variance extracted (AVE) was greater than 0.5 and the composite reliability (CR) was higher than 0.8, confirming the convergent

validity (Bagozzi & Yi, 1988). The Cronbach's alpha values for all the constructs were higher than 0.8. The discriminant validity of the scale was assessed by comparing the square root of the AVE of a particular structure and its inter-correlation with other structures (Fornell & Larcker, 1981). As shown in Table 3, the square root of the AVE of both studies was greater than the inter-correlation, confirming discriminant validity. Confirmatory factor analysis (CFA) results show that the overall fit of the two-group model was satisfactory (Study1: X^2/df = 1.921; CFI = 0.972; TLI = 0.967; SRMR = 0.034, Study2: X^2/df = 2.167; CFI = 0.967; TLI = 0.961; SRMR = 0.037) (Byrne, 2010).

Table 3. Correlation of the Measures

Study 1 (HD)	M	SD	1	2	3	4	5
CC	3.985	1.398	0.850				
PFV	5.106	1.018	0.321	0.840			
PSV	4.175	1.396	0.566	0.391	0.880		
PEV	4.473	1.250	0.449	0.648	0.451	0.840	
PI	3.985	1.269	0.442	0.500	0.459	0.682	0.850
Study 2 (DS)	M	SD	1	2	3	4	5
CC	4.275	1.457	0.874				
PFV	5.405	0.936	0.276	0.824			
PSV	4.637	1.312	0.555	0.517	0.888		
PEV	4.582	1.088	0.427	0.721	0.602	0.816	
PI	4.848	1.173	0.390	0.563	0.385	0.656	0.828

Note: CC = Conspicuous consumption, PEV = Perceived emotional value, PFV = Perceived functional value,
      PSV = Perceived social value, PI = Purchase intention.

IV. Results and Discussion

Parallel multiple mediation allows an assessment of one mediator's effect while controlling for the effects of all the other mediators, as well as

comparing their statistically significant differences in indirect effects (Montoya & Hayes, 2017). SPSS PROCESS macro (Model 4) is commonly used to calculate mediation effects with a 95% bias-corrected bootstrap confidence interval and 5,000

bootstrap resampling (Hayes, 2017). PROCESS provides bootstrapping for indirect effects and confidence intervals that are significant for established mediating effects when the confidence intervals do not include zero (Hayes, 2017). To compare statistical differences in indirect pathways (especially when the indirect effects have different signs), we used the absolute values difference method ($|a1b1| - |a2b2|$) suggested by Coutts and Hayes (2022).

In study 1, as displayed in Figure 1 and Table 4, conspicuous consumption shows a positive and significant effect on purchase intention (c =0.102, SE =0.046, P =0.028) as predicted in our first hypothesis, and the total mediation effect is also positive and significant (effect =0.248 95% [0.176, 0.319]). Among the three mediators, the indirect effects of conspicuous consumption on purchase intention through perceived social value (effect =0.061 95% [0.007, 0.121]) and perceived emotional value (effect =0.163 95% [0.105, 0.227]) are statistically different from zero, indicating that both mediate the relationship between conspicuous consumption and purchase intention.

The indirect effect of perceived functional value is not significant (effect =0.024 95% [−0.003, 0.055]).

We then made a pairwise comparison of the three indirect effects to differentiate the magnitude of the impact of the two indirect effects, which can be distinguished if zero is not included in the interval (Coutts & Hayes, 2022; Preacher & Hayes, 2008). As shown in Table 4, the indirect effect of conspicuous consumption on purchase intention through perceived emotional value is significantly greater than the indirect effect through perceived functional value (effect =−0.139 95% [−0.216, −0.070]) and perceived social value (effect =−0.101 95% [−0.194, −0.009]). The pairwise comparison between perceived functional and social value is not statistically significant (effect =−0.038 95% [−0.101, 0.023]). The results suggest that both perceived emotional and social value partially mediate the relationship between conspicuous consumption and purchase intention for hedonic products, with perceived emotional value playing a more important role than perceived social value.

Fig. 1. Model of Hypothesized Relationship of Study 1 (HD)
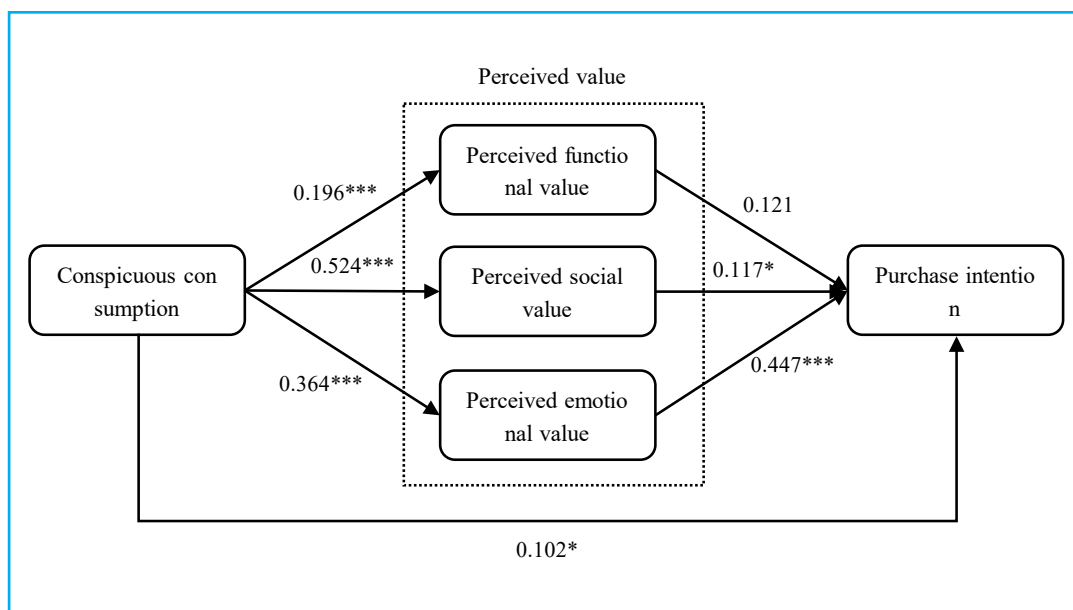
Table 4. Results of Mediation Effect of Study 1 (HD)

Direct Effect						
	Coeff.	SE	t	P	LLCI	ULCI
CC	0.102	0.046	2.209	0.028	0.011	0.193
Mediation Effect						
	Effect		BootSE		BootLLCI	BootULCI
Total Effect	0.248		0.036		0.176	0.319
PFV	0.024		0.015		−0.003	0.055
PSV	0.061		0.029		0.007	0.121
PEV	0.163		0.031		0.105	0.227
Contrasts						
PFV vs PSV	−0.038		0.032		−0.101	0.023
PFV vs PEV	−0.139		0.037		−0.216	−0.070
PSV vs PEV	−0.101		0.047		−0.194	−0.009
Model	R^2		F		P	
	0.436		31.590		0.000	

In Study 2, a utilitarian product was used to test our hypotheses. Our results show that the direct effect of conspicuous consumption on purchase intention is positive and significant (c =0.134, SE =0.040, P =0.001), as illustrated in Figure 2 and Table 5. The total mediation effect is positive and significant (effect =0.141 95% [0.073, 0.216]). Among the three mediators, perceived functional value (effect =0.046 95% [0.015, 0.085]) and perceived emotional value (effect =0.121 95% [0.067, 0.179]) partially mediate the relationship between conspicuous consumption and purchase intention, while the indirect effect of perceived social value is not significant (effect =−0.026 95% [−0.079, 0.026]).

The pairwise comparison indicates that the indirect effect of conspicuous consumption on purchase intention through perceived emotional value is significantly greater than the indirect effect through perceived functional value (effect =−0.075 95% [−0.139, −0.013]) and social value (effect =−0.095 95% [−0.154, −0.032]). The pairwise comparison between perceived functional and perceived social value is not statistically significant (effect =0.020 95% [−0.035, 0.064]). Results on the utilitarian product indicate that both perceived emotional and functional value partially mediate the association between conspicuous consumption and purchase intentions, with perceived emotional value more important than perceived functional value.

Fig. 2. Model of Hypothesized Relationship of Study 2 (DS)
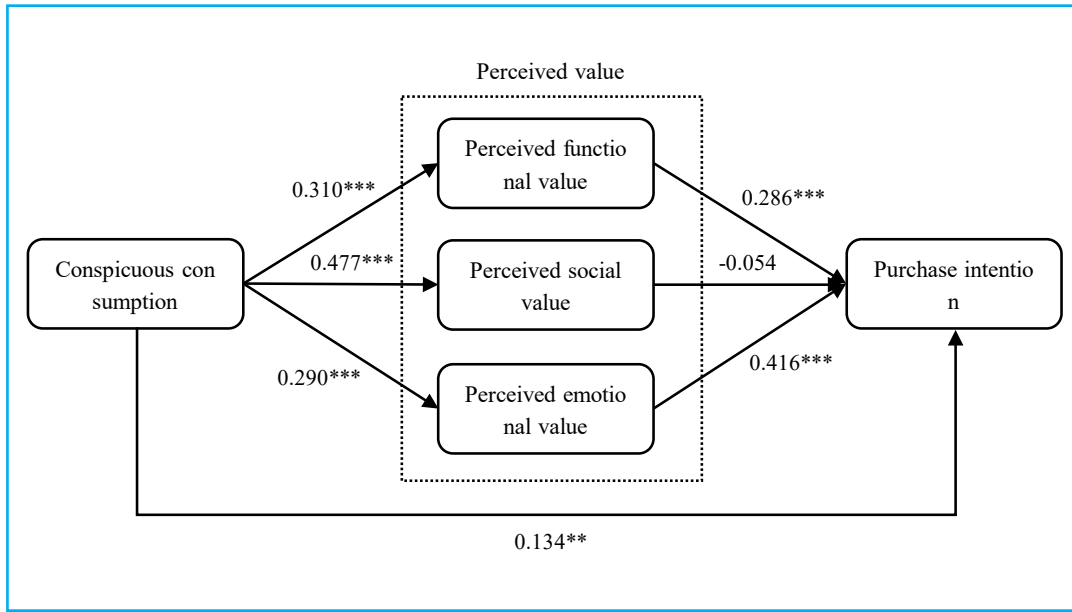
Table 5. Results of Mediation Effect of Study 2 (DS)

Direct Effect						
	Coeff.	SE	t	P	LLCI	ULCI
CC	0.134	0.040	3.323	0.001	0.055	0.213
Mediation Effect						
	Effect		BootSE		BootLLCI	BootULCI
Total Effect	0.141		0.036		0.073	0.216
PFV	0.046		0.018		0.015	0.085
PSV	−0.026		0.027		−0.079	0.026
PEV	0.121		0.028		0.067	0.179
Contrasts						
PFV vs PSV	0.020		0.025		−0.035	0.064
PFV vs PEV	−0.075		0.032		−0.139	−0.013
PSV vs PEV	−0.095		0.031		−0.154	−0.032
Model	R^2		F		P	
	0.399		28.817		0.000	

This research examines how Chinese consumers' conspicuous consumption tendencies influence their purchase intention toward global brands and how their different perceptions of value vary according to product type. The results contribute to the evidence that conspicuous consumption positively influences purchase intention toward global brands (H1). The results of Study 1 suggest that for hedonic global products, conspicuous consumption influences purchase intention both directly and indirectly through perceived social value (H2b) and perceived emotional value (H2c). In Study 2, pertaining to a utilitarian global product, conspicuous consumption influences purchase intention both directly and indirectly through perceived functional value (H2a) and perceived emotional value (H2c). The results of both studies indicate that perceived emotional value is critical in mediating the relationship between conspicuous consumption and purchase intention toward global brands.

V. Conclusions

1. Theoretical Implications

This study explores how emerging market consumers' conspicuous consumption, mediated by multidimensional perceived value, influences purchase intentions toward global brands. The findings highlight the importance of conspicuous consumption and perceived value in predicting global brand purchase intentions within emerging markets. This study complements previous research on the impact of consumer perceptions of global brands in emerging markets (Alden et al., 1999; Steenkamp et al., 2003) and contributes to the literature about conspicuous consumption (O'Cass & McEwen, 2004; Veblen, 1899). Previous research on conspicuous consumption has focused on luxury brands (Giovannini et al., 2015; Huang & Wang, 2018) and fashion marketing (Lewis & Cunningham, 2016; Souiden et al., 2011), and there has been little empirical analysis of

perceptions of global brands. Consumers with conspicuous consumption habits tend to acquire products and services to satisfy their spiritual needs, demonstrate their social status, and gain a sense of belonging to a group (Roy Chaudhuri et al., 2011). For consumers in emerging markets, rapid economic growth and rising income levels have contributed to materialism and conspicuous consumption (Podoshen et al., 2011). Consequently, these consumers aspire to own brands that are recognized, trusted, and widely recognized.

This study examined how conspicuous consump-tion is mediated by multidimensional perceived value to impact purchase intention for global brands depending on the type of goods. The results show that each perceived value possesses a different effect when considering different product types. Perceived social and emotional values mediate the relationship between conspicuous consumption and purchase intention for hedonic products, which provide sensory experiences, such as pleasure, fun, and enjoyment (Kempf, 1999). For conspicuous consumers, hedonic global products are more likely to evoke pleasures and emotions, and fulfill consumers' spiritual needs (Chen et al., 2019). Perceived functional value did not mediate the relationship role in Study 1. The consumption of hedonic products is multisensory (Hirschman & Holbrook, 1982). Conspicuous consumers perceive more sensory stimulation and emotional satisfaction from hedonic products and ignore the product's practicalities in their purchase decisions.

The results of Study 2, which tested a utilitarian product, indicate that conspicuous consumption influences purchase intention through perceived functional and emotional value. Perceived social value did not have a mediating influence. This result is unexpected. One possible explanation is that conspicuous consumers purchase utilitarian products more based on the product's ability to satisfy rational needs (Sinha & Verma, 2020) and are less concerned with the product's ability to shape their social image. This finding may also relate to the characteristics of the products we selected. Dyson is considered a high-tech luxury

product in the Chinese market, and research has demonstrated that consumers are more likely to prefer and seek pleasure from this brand than from status symbols (Ho et al., 2022). A study by Kolbl et al. (2020) also found that perceived social value does not increase purchase intention toward global brand. Previous research suggests that utilitarian products are functional, pragmatic, and usually unrelated to evoking affective states (Strahilevitz & Myers, 1998). However, our findings show that perceived emotional value plays a critical role in the relationship between conspicuous consumption and purchase intention for both product types. In concurrence with Bettiga et al. (2020), we confirm that both functional and hedonic products elicit emotional responses in consumers.

2. Practical Implications

This study's results provide valuable managerial implications for marketing managers and practitioners. Our findings contribute to a more comprehensive understanding of the psychological characteristics of consumers in emerging markets. When entering new markets, global brand marketers should carefully understand the values and consumption behaviors of local consumers. For consumers who seek social status, recognition and a sense of group belonging, global marketers can utilize various media tools to promote their brands. It is essential not only to project a global image and highlight the brand's internationalism, but also to elevate the brand's status and visibility while highlighting its symbolic significance. By understanding the varying mediating roles of perceived functional, social, and emotional value between conspicuous consumption and purchase intentions toward global brands across different product types, managers can develop targeted marketing strategies. Practitioners can emphasize perceived emotional and social value in their communication strategies when targeting hedonic products to elicit feelings of satisfaction, pleasure, and high status in consumers. For utilitarian products, practitioners should enhance

the perceived functional and emotional value of the brand to increase consumers' purchase intentions. Perceived emotional value drives increased conspicuous consumption of global brands, regardless of whether the products are hedonic or utilitarian products (Yeh et al., 2016). This is an important implication from a managerial perspective. Consumers who are emotionally satisfied with a purchase are more likely to speak positively about the brands (Carroll & Ahuvia, 2006). Global brands should establish an emotional connection with consumers when marketing to stimulate favorable emotional perceptions of their products. Enhance positive feelings, such as love and enjoyment of the brand by strengthening interaction with consumers.

3. Limitations and Directions for Future Research

The current study has some limitations and should be considered a springboard for future studies. First, in terms of respondent sampling, this study utilized non-probability sampling. There is an oversampling of individuals with higher education, which may have biased the results. Moreover, the mediating variable in this model only examines perceived value, which is not the only criterion influencing consumers' purchasing decisions, and future research should explore other factors. Only global brand consumers from China were selected for this study. Given that cultural differences may affect consumers' values, needs, and purchase preferences (Yang et al., 2019), follow-up studies could extend this research to other cultural groups, which will help determine the robustness of our research model. Study 2 established that perceived social value does not mediate the relationship between conspicuous consumption and purchase intention, but this does not imply that perceived social value is irrelevant to consumer behavioral responses. Future studies could further test and validate the connection between perceived social value and consumer behavioral responses.

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Role Clarity and Individual Performance at Work: The Role of Emotional Exhaustion and Interpersonal Justice

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ABSTRACT

Purpose – This study examines the effects of role clarity on individual performance at work and emotional exhaustion and the moderating effect of interpersonal justice on the relationship between them. Additionally, this study investigated the moderated mediating effect of emotional exhaustion on the relationship between role clarity and individual performance.

Design/Methodology/Approach – Data were collected through an online response method from 327 employees of companies located in Seoul, Korea. This study verified hypotheses using the SPSS 28.0 program and the PROCESS Macro v4.2 program.

Findings – The results of this study are as follows: first, role clarity was found to have a positive effect on individual performance and a negative effect on emotional exhaustion; second, interpersonal justice was shown to moderate the relationship between emotional exhaustion and individual performance; and finally, emotional exhaustion was found to have a moderated mediation of the relationship between role clarity and individual performance.

Research Implications – The results of this study have several practical implications. First, companies should clarify employees' roles in performing their jobs through an accurate division of duties. Second, companies should attract and foster leaders who act fairly. Finally, companies should try to reduce the emotional exhaustion of their employees.

Keywords: emotional exhaustion, individual performance, interpersonal justice, role clarity
JEL Classifications: J24, M14

I. Introduction

Amidst the fervor of organizational transformation, the intricate interplay between individual performance and the resultant organizational performance is occasionally overlooked (DeNisi & Smith, 2014). In today's world, many new businesses and companies are bound to become more flexible (Lee, 2022b), which can lead to uncertainty in employee roles, increase the tension and burden of job performance, and make it difficult to achieve individual performance (Rahaman et al., 2022). To cope with the constraints of these uncertain times, companies must clearly define employees' roles in the workplace. Specifically, when employees are given a clear role at work, they can devote their energy to achieving their goals and personal performance.

Role clarity refers to an individual's perspective on what is expected of employees within an organization and team in relation to their work tasks (Hall, 2008). Role clarity implies that employees are aware of their tasks, roles, and responsibilities and understand what their supervisors expect from them (Kalshoven et al., 2011). The protection of employee well-being is an ethical concern in organizations. Given the strong negative impact of emotional exhaustion, prevention is a major ethical issue for organizations and management (Barnett et al., 2007; Guest, 2017).

Role clarity provides employees with greater control over their jobs. According to Karasek's (1998) demand-control model, increasing control through role clarity leads to less tension among employees. In other words, if an employee is clearly assigned a role, their emotional exhaustion is reduced, which has the positive effect of preventing depletion. In contrast, a lack of role clarity causes employees to engage in coping behaviors to prevent negative consequences such as stress and anxiety, which places additional demands on employees, creates an additional burden on them, and promotes emotional exhaustion.

Emotional exhaustion, an area of burnout, can be explained as the tension or stress experienced by individuals during work within an organization (D'Souza et al., 2023). If employees use their emotional resources excessively while performing their jobs, they experience a state of exhaustion, and it depletes their emotions. This emotional exhaustion can result from excessive work demands, job stress, negative life events, and work-life imbalances. Employees with high emotional exhaustion do not perform their jobs passionately, are easily exhausted mentally and physically, are easily angry, and have difficulty satisfying their job performance requirements. Employees' emotional exhaustion negatively affects job satisfaction, life satisfaction, organizational career growth, and personal performance (Saeed et al., 2022).

The Job Demands–Resources theory is one of the most widely used to study psychosocial variables in the work context (Bakker & Demerouti, 2017), and, according to this theory, interpersonal justice is a valuable resource. Understanding of the important role of interpersonal justice in organizations and research in this field have increased over the past 20 years (Colquitt et al., 2013). Interpersonal justice refers to employees being respected and treated with dignity by organizational leaders (Cropanzano et al., 2007). In short, interpersonal justice is promoted when decision-makers treat people with respect and sensitivity and thoroughly explain the basis for decision-making.

According to previous studies, employees need sufficient socio-emotional resources to succeed at work (Zhai et al., 2020), and interpersonal justice signals that supervisors are willing to provide employees with the resources (Halvesleben et al., 2014). Rahaman et al. (2022) found that interpersonal justice had a positive effect on employees' passion for work. Additionally, employees' perception of interpersonal justice in the workplace was found to affect physical and mental health (Robbins et al., 2012), job performance (Colquitt et al., 2001), and job involvement (Heponiemi et al., 2013).

Research examining emotional exhaustion and individual performance at work predominantly concentrates on direct relationships, resulting

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in a deficit of studies exploring the influence of moderating variables in this dynamic. Specifically, the existing literature lacks empirical investigation into the impact of interpersonal justice on the relationship between emotional exhaustion and individual performance. Furthermore, insufficient empirical attention has been paid to exploring the mediating role of emotional exhaustion moderated by interpersonal justice in the relationship between role clarity and individual performance. In this context, this study is differentiated from previous studies.

Therefore, this study examines the effect of role clarity on individual performance and the moderated mediating effect of emotional exhaustion on the relationship between role clarity and individual performance. Additionally, this study investigates the moderating effect of interpersonal justice on the relationship between emotional exhaustion and individual performance. Particularly, this study is significant because it verifies that emotional exhaustion mediates the relationship between role clarity and individual performance while reflecting on the moderating effect of interpersonal justice.

II. Literature Review

1. Role Clarity

Role clarity is related to clarity about the purpose, task, and responsibility of an individual's work (Pejtersen et al., 2010). Role clarity refers to the degree to which an individual feels that they have clear guidance on the roles and behaviors expected in relation to the job. Role clarity is explained by a state of role conflict and a lack of role ambiguity (Adil et al., 2023). Newman et al. (2015) argued that employees may experience different levels of role clarity. Those who experience high levels of role clarity have a stronger understanding and confidence in work-related tasks than employees who experience low levels of role clarity.

Role clarity is a job resource that functions to

achieve goals and related results, which can also facilitate reducing job demands and costs and promoting learning and development (Karkkola et al., 2019; Lee, 2022a). Employees with enhanced role clarity focus on completing tasks at a high level because they know the expected criteria and achieve the goals. Schumacher et al. (2015) argued that role clarity is a resource that managers should access early in the change process to break the potential loss spiral because it leads to adverse employee performance before the change process gains momentum.

2. Emotional Exhaustion

Emotional exhaustion is the feeling that one's emotional energy resources are depleted (Maslach & Jackson, 1981). Employees depleted of emotional resources are less open minded, less motivated, and more indifferent (Hagen, 1989). As employees' emotional resources are depleted, they no longer feel comfortable devoting themselves on a psychological level. At this stage, negative and cynical attitudes and emotions toward customers develop. These negative reactions to customers can be linked to experiences of emotional exhaustion.

Emotional exhaustion has negative consequences for both employees and organizations. According to the theory of self-exhaustion (Baumeister et al., 1998), self-resource depletion not only affects self-awareness but also leads to failure of self-control (Baumeister et al., 2006), depletion of employees' resources not only affects their behavior and mental and physical health but is also linked to individual and organizational performance. For example, chronic stress at work has been shown to be associated with other psychological disorders, such as anxiety and depression (Holden & O'Connell, 2023). Additionally, chronic stress reduces cognitive function and increases the likelihood of developing cardiovascular diseases (Golkar et al., 2014). Finally, emotional exhaustion negatively affects autonomy, environmental domination, and purpose in life (Kim et al., 2022).

3. Interpersonal Justice

The organizational justice field differentiates among various conceptualizations of justice that contribute to understanding organizational functioning, commonly categorized into four elements: distributive, procedural, informational, and interpersonal (Colquitt, 2001). Procedural justice encompasses the acknowledgment that a fair decision-making process is employed to attain specific outcomes; individuals favor procedures that account for all pertinent information and remain impartial (Van Prooijen et al., 2012). Distributive justice pertains to how employees perceive the fairness of outcomes or resources obtained from their interactions within the organization, while informational justice encompasses the explanations individuals receive regarding the choice of a specific procedure or decision-making process (Colquit et al., 2001).

The concept of interpersonal justice was first introduced by Bies and Moag (1986). Interpersonal justice reflects people's perceptions of fairness as treated by others, such as authoritative figures (Greenberg, 2010). It is influenced by factors such as justification, truthfulness, respect and courtesy. People in emotional states tend to be controlled by that state; more precisely, they tend to immerse themselves in emotions and persist in their planned actions to deal with them (Sur, 2022; Weiss & Cropanzano, 1996). In this context, it is important for interpersonal justice among employees that their bosses treat them with respect and dignity. This is because when employees are positively aware of their supervisor's correct treatment, the planned positive behavior continues. This study focused on employees' perceptions of interpersonal justice toward their supervisors.

4. Individual Performance

Contemporary organizations undergo continual transformations, crucial for maintaining competitiveness and meeting performance standards. Performance, defined as the assistance rendered by employees to attain organizational goals (Motowildo et al., 2014), is the culmination of individual work output within a specified timeframe in the context of the division of labor (Cheng et al., 2007). This concept delineates the achievements individuals can make in terms of quantitative and qualitative goals within their job roles. The scrutiny of individual performance in the workplace is of significant interest to scholars and organizational managers, as indicators of productivity, well-being, and competitiveness directly correlate with individual performance.

The individual performance of employees stands as a crucial criterion for organizational success. It remains a pivotal phenomenon within organizational contexts, historically and persistently attracting attention, as individual employee performance aggregates into organizational performance (Sari et al., 2020), subsequently influencing the prosperity of society (Zhu, 2022). Moreover, the performance of teams and organizations hinges upon the contributions of individual employees (Abualoush et al., 2018), with higher personnel performance directly correlating with heightened organizational performance.

III. Hypotheses Development

1. Role Clarity and Individual Performance

Employees are considered an important asset of the organization (Adil et al., 2023; Choi & Park, 2022). Human resources have gained increased significance within organizations; however, the economic value to the organization lies not only in the possession of highly skilled employees with extensive knowledge and superior abilities but also in their alignment with the organization's objectives, their dedication to achieving those objectives, and their efforts to contribute to the organization's profits. Clear and defined goals for employees are imperative for their endeavors and performance to effectively contribute to the accomplishment of organizational goals and benefits.

Role clarity is positively related to employee performance. Adil et al. (2023) reported that role clarity had a positive effect on organizational citizenship behavior. Whitaker et al. (2007) found that role clarity increased task performance. Karkkola et al. (2019) noted that role clarity increased work vitality. Gilboa et al. (2008) reported that employees with high role clarity are aware of the job requirements and procedures required to meet them and are likely to ultimately achieve high job performance. Accordingly, we propose the following hypothesis:

H1: Role clarity will be positively related to individual performance.

2. Role Clarity and Emotional Exhaustion

Roles function as bonds, fostering connections among individuals by acting as vigilant guides for both organizations and individuals, indicating mutual desires and expectations (Adil et al., 2023). When employees have a clear understanding of their roles, they can concentrate their efforts on achieving individual job performance, thus avoiding the wastage of physical and mental resources. In essence, providing mental clarity in roles can mitigate employee emotional exhaustion. Role clarity not only enhances job satisfaction but also diminishes emotional fatigue, as employees effectively perform their roles when equipped with the necessary data and information.

Employees' role clarity is related to emotional exhaustion. According to the Job-Demand–Resources-Model, role clarity alleviates the potential negative impact of high job demands as a job-related resource (Bakker & Demerouti, 2017). Role clarity helps alleviate the detrimental effects of job demands on job mental tension (Schumacher et al., 2015). Lang et al. (2007) argued that employees can withstand greater job demands when they understand what is expected of them. Role clarity has been shown to have a positive impact on mental health (Thomson et al., 2021). Vullinghs et al. (2020) demonstrated that role

clarity lowered burnout. Accordingly, we propose the following hypothesis:

H2: Role clarity will be negatively related to emotional exhaustion.

3. Moderating Effect of Interpersonal Justice

Interpersonal justice is significantly associated with stress and mental health (Robins et al., 2012). Unfair treatment is generally associated with anger and anxiety, which are important stress-related emotions that have high potential effects on poor health (Lazarus, 2006). Ogunfowora et al. (2023) showed that guilt increased emotional exhaustion following misconduct. Summarily, interpersonal justice is an important job-related resource; therefore, it is possible to predict its buffering effect on the relationship between emotional exhaustion and individual performance.

Interpersonal justice has been found to be a positive prerequisite for improving individual performance. However, how emotional exhaustion interacts with interpersonal justice in terms of its impact on individual performance is not well known. The interaction between interpersonal justice and emotional exhaustion is positive for individual performance, as employee emotional exhaustion lowers individual performance, whereas interpersonal justice increases it. Accordingly, we predicted that interpersonal justice moderates the relationship between emotional exhaustion and individual performance and posited the following hypothesis:

H3: Interpersonal justice will moderate the relationship between emotional exhaustion and individual performance.

4. Moderated Mediation Effect of Emotional Exhaustion

A high level of emotional exhaustion indicates that employees lack the resources to handle their job demands effectively, leading to a decline in

job performance. Halvesleben and Buckley (2004) argued that emotional exhaustion has a negative impact on individuals and organizations, including reduced productivity, increased absenteeism, and turnover. Parker and Kulik (1995) showed that high levels of emotional exhaustion were related to low levels of role performance. Through a meta-analysis, Taris (2006) found that high levels of emotional exhaustion were associated with low performance.

Emotional exhaustion is a process variable necessary to explain the effect of role clarity on individual performance. As emotional exhaustion is a resultant variable of role clarity and a predictor of individual performance, it can be predicted that role clarity indirectly affects individual performance through emotional exhaustion. More precisely, role clarity has a negative effect on emotional exhaustion, whereas emotional exhaustion has a negative effect on individual performance. This means that role clarity directly affects emotional exhaustion while indirectly

affecting individual performance through emotional exhaustion.

However, thus far, only a few studies have analyzed the mechanisms of role clarity, emotional exhaustion, and individual performance. A similar study by Saeed et al. (2022) showed that emotional exhaustion mediated the relationship between autocratic leadership and organizational career growth. Thus, this study attempted to verify the moderated mediating effect of emotional exhaustion, as emotional exhaustion mediates the relationship between role clarity and individual performance, whereas interpersonal justice moderates the relationship between emotional exhaustion and individual performance. Accordingly, we proposed the following hypothesis:

H4: Emotional exhaustion will mediate the relationship between role clarity and individual performance.

Fig. 1 depicts an overall conceptual model.

Fig. 1. Conceptual Model
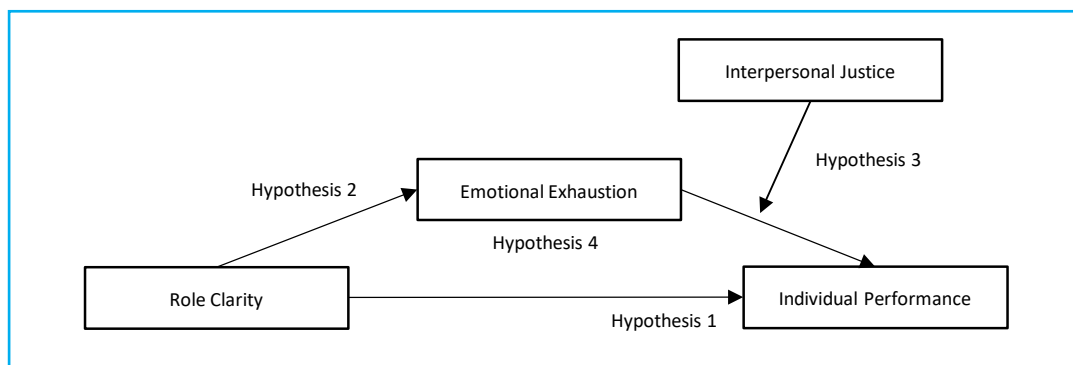
IV. Methodology

1. Research Data

This study collected data using an online questionnaire administered to employees working at diverse companies in Seoul, Korea, from May 2, 2023, to June 23, 2023. Instructions for completing the questionnaire were presented on the first page and answers were to be provided anonymously to increase the accuracy of responses. A total of 327 completed questionnaires were used as data for hypothesis verification, excluding 23 for which the survey responses were omitted or were unfaithful.

The demographic characteristics of the respondents are as follows: 57.8% of the respondents were men, 40.1% were women, 56.0% were single, and 44.0% were married. By age, those aged 26–30 years accounted for 21.4%, followed by 19.9% aged 36 to 40, 17.7% aged 31 to 35, 11.9% aged 41 to 45, 11.6% aged 51 and over, 10.7% aged 25 and under, and 6.7% aged 46 to 50. By academic background, 54.7% of the respondents had bachelor's degrees, 19.3% had associate degrees, 10.7% were high school graduates, 6.7% had master's degrees or higher, 7.0% were university students, 1.2% had doctoral graduates, and 0.9% were doctoral students.

2. Measures

We measured four variables using a seven-point Likert scale (1 = "not at all," 7 = "absolutely"): role clarity, emotional exhaustion, interpersonal fairness, and individual performance. Role clarity was measured using five questions from John and Robert (1965); examples include "I know what my responsibilities are" and "I know exactly what is expected of me in my job."

Emotional exhaustion was measured using five questions from Maslach et al. (2017); examples include "I feel used up at the end of the workday"

Table 1. Factor Analysis Results and Reliability

| Item | | Factor | | | | Communalities |
		EE	RC	IJ	IP	
Emotioanl Exhanstion (EE)	4	.912	-.013	-.089	-.006	.580
	2	.907	-.026	-.133	-.061	.703
	3	.905	-.091	-.125	.031	.690
	1	.841	.009	-.165	.048	.830
	5	.759	-.142	.026	-.036	.715
Role Clarity (RC)	4	-.011	.872	.136	.225	.737
	3	-.107	.789	.086	.220	.845
	5	-.063	.778	.219	.241	.843
	2	-.096	.719	.232	.351	.839
	1	-.032	.574	.323	.380	.598
Interpersonal Justice (IJ)	3	-.134	.270	.873	.124	.863
	1	-.165	.310	.851	.107	.851
	4	-.118	.206	.833	.110	.629
	2	-.060	-.005	.624	.252	.579
Individual Performance (IP)	1	-.002	.336	.239	.832	.859
	2	.011	.322	.271	.821	.456
	4	.119	.235	-.014	.714	.869
	3	-.197	.308	.275	.647	.763
Cronbach' α		.919	.884	.856	.859	-
% of Variance		21.650	19.128	17.101	15.730	-
Cumulative %		21.650	40.778	57.879	73.609	-

and "I feel fatigued when I get up in the morning and have to face another day on the job."

Interpersonal justice was measured using four questions used by Colquitt (2001) and sourced on Bies and Moag (1986); examples include "My boss has treated me in a polite manner" and "My boss has refrained from improper remarks or comments".

Individual performance was measured by four questions used by Van Woerkom and Sanders (2010); examples include "I consider myself one of the best employees of this organization" and "If I compare myself to my closest colleagues, I am better in my job".

Finally, we controlled for employees' demographic characteristics (gender, marital status, age, and educational background) that affect individual performance. Men were coded as 1, women as 0, married as 1, and unmarried as 0. Age was measured by age, and academic background was coded as 1 for high school graduates, 2 for associate degrees, 3 for university students, 4 for bachelor's degrees, 5 for master's degrees, 6 for doctoral students, and 7 for doctoral graduates.

3. Reliability and Validity

We verified the validity of the research tool using the Varimax rotation method. Through this, we derived four factors: role clarity, emotional exhaustion, interpersonal justice, and job performance (see Table 1). We measured Cronbach's α to verify the reliability of the research tool. Cronbach's α for all factors was .856 or higher, indicating that the overall reliability was high.

V. Results

Table 2 presents the descriptive statistics for the variables used in this study. We conducted the Harman's single-factor test to analyze whether there was a problem with common method variance (Podsakoff et al., 2003). Factor analysis revealed that the total explanatory power of the four factors used in this study was 73.61% and that the explanatory power of extraction as a single factor without rotation was significantly reduced to 38.51%. It can be concluded that common method variance did not occur because the explanatory power of the total variance did not exceed 50%.

Table 2. Mean, Standard Deviation, and Correlations among Variables[a]

	Variable	M	s.d.	1	2	3	4	5	6	7
1.	Gender[b]	.593	.492							
2.	Marriage[c]	.440	.497	.330***						
3.	Age	36.590	1.168	.315***	.557***					
4.	Education	3.362	1.275	.150**	.188***	.216***				
5.	Role Calrity	5.400	1.044	.139*	.185***	.222***	.150**			
6.	Emotional Exhaustion	4.053	1.502	-.148**	-.008	-.074	-.046	-.157**		
7.	Interpersonal Justice	5.147	1.283	.119*	.069	.029	.099	.512***	-.250***	
8.	Individual Performance	4.929	1.204	.152**	.228**	.260***	.184***	.718***	-.065	.462***

Notes: 1. [a] $n = 327$, [b] 1 = Male, 0 = Female, [c] 1 = Marriage, 0 = Single.
       2. $+p<.10$, $*p<.05$, $**p<.01$, $***p<.001$.

We conducted a hierarchical regression analysis to verify Hypotheses 1 and 2. Control variables (gender, marriage, age, and education) were processed in the first step, and role clarity was added in as an independent variable in the second step. Hypothesis 1 predicted that role clarity would be positively related to individual performance. As shown in Model 4 in Table 3, role clarity was found to have a positive effect on individual performance (β = .685, p < .001). Thus, Hypothesis 1 was supported.

Table 3. Regression Analysis for Emotional Exhaustion and Individual Performance[a]

Variable	Emotional Exhaustion		Individual Performance		
	Model 1	Model 2	Model 3	Model 4	Model 5
Step 1: Controls					
Gender[b]	-.150*	-.142*	.051	.012	.020
Marriage[c]	.084	.094	.097	.051	.046
Age	-.068	-.048	.164*	.064	.067
Education	-.025	-.011	.123*	.056	.057
Step 2: Independent					
Role Clarity		-.143*		.685***	.692***
Step 3: Mediator					
Emotional Exhaustion					.055
R^2	.028	.047	.095	.532	.535
$\triangle R^2$		.019*		.437***	.003
F	2.344+	6.518*	8.649***	74.692***	62.779***
df	4, 329	5, 328	4, 329	5, 328	6, 327

Notes: 1. [a] n = 327, [b] 1 = Male, 0 = Female, [c] 1 = Marriage, 0 = Single.
     2. +p<.10, *p<.05, **p<.01, ***p<.001.

Hypothesis 2 predicted that role clarity would negatively relate to emotional exhaustion. As shown in Model 2 in Table 3, role clarity was found to have a negative effect on emotional exhaustion (β = -.143, p < .05). Thus, Hypothesis 2 is supported.

We verified the moderating effect of interpersonal justice using the PROCESS Macro v4.2 program and estimated the 95% confidence interval with 5,000 bootstrapping samples. Hypothesis 3 predicted that interpersonal justice would moderate the relationship between emotional exhaustion and individual performance. As shown in Table 4, we found that the interaction between emotional exhaustion and interpersonal justice was related to individual performance in a negative direction (B =-.054, SE = .024, p <

.001). This study shows the interaction effect in Fig. 2 to examine this interaction effect in more detail. These interaction diagrams show that high interpersonal justice weakens the relationship between emotional exhaustion and individual performance. Thus, Hypothesis 3 was supported.

Table 4. Moderating Role of Interpersonal Justice in the Impact of Emotional Exhaustion on Individual Performance[a]

(a) Moderating Effect of Interpersonal Justice

Variable	Coeff	BootMean	BootSE	BootLLCI	BootULCI
Controls					
Gender[b]	.055	.058	.099	-.138	.254
Marriage[c]	.070	.064	.117	-.166	.292
Age	.012	.012	.005	.002	.023
Education	.047	.046	.036	-.022	.116
Role Clarity	.680	.680	.056	.572	.792
Independent					
Emotional Exhaustion	.368	.362	.138	.077	.628
Moderator					
Interpersonal Justice	.390	.384	.111	.148	.579
Interaction					
Emotional Exhaustion × Interpersonal Justice	-0.54	-.053	.024	-.099	-.004
R^2 = .561, F = 51.856***					

(b) Conditional Effects of the Focal Predictor at Values of the Moderator

Interpersonal Justice	Effect	SE	t	LLCI	ULCI
3.863(-1SD)	.160**	.048	3.301	.065	.250
5.147(Mean)	.091**	.032	2.804	.027	.150
6.430(+1SD)	.022	.035	.613	-.048	.090
ΔR^2 = .009, F = 6.361*					

Notes: 1. [a] n = 327, [b] 1 = Male, 0 = Female, [c] 1 = Marriage, 0 = Single.
      2. *p<.05, **p<.01, ***p<.001.

We verified the moderated mediating effect of emotional exhaustion using the PROCESS Macro v4.2 program and estimated the 95% confidence interval using 5,000 bootstrapping samples. Hypothesis 4 predicted that emotional exhaustion would mediate the relationship between role clarity and individual performance. The analysis revealed that, as shown in Table 5, role clarity had a significant direct effect on job performance (B = .680, SE = .052, p < .001), and because 95% CI does not contain zero, the adjusted mediating index was significant (index=.011, 95% CI= [.000/.029]), and emotional exhaustion was verified to have a moderated mediating effect under this condition.

Fig. 2. Interaction between Emotional Exhaustion and Interpersonal Justice with Individual Performance as Dependent
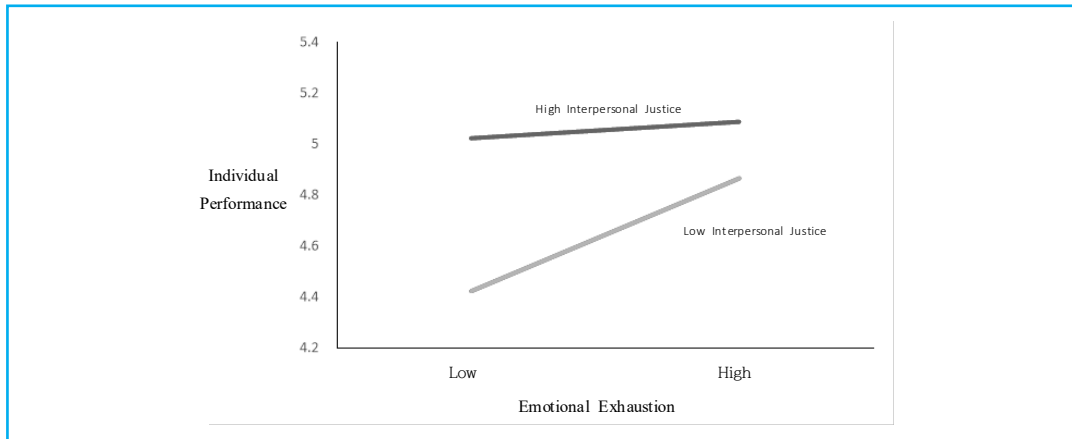
Particularly, in the index of mediation moderated by interpersonal justice, there is no indirect effect because zero exists between BootLLCI and BootULCI; thus, there is a full mediating effect in the +1SD group. However, there are partial mediating effects because there is no indirect effect between BootLLCI and BootULCI in the -1SD and Mean groups (see b in Table 5). Interpersonal justice moderated the indirect effect of emotional exhaustion. Thus, Hypothesis 4 was supported.

Table 5. Mediating Effect of Emotional Exhaustion moderated by Interpersonal Justice[a]

(a) Direct effect of Role Clarity on Individual Performance

Effect	SE	t	LLCI	ULCI
.680***	.052	12.970	.576	.783

(b) Conditional Indirect Effects of Role Clarity on Individual Performance:
Indirect Effect (Role Clarity → Emotional Exhaustion → Individual Performance)

Interactional Justice	Effect	BootSE	BootLLCI	BootULCI
3.863(-1SD)	-.033	.019	-.076	-.003
5.147(Mean)	-.019	.010	-.042	-.001
6.430(+1SD)	-.004	.008	-.019	.014

(c) Index of Moderated Mediation

Index	BootSE	BootLLCI	BootULCI
.011	.008	.000	.029

Note: [a] n = 327, ***p<.001.

VI. Conclusions

1. Results Summary and Implications

This study examined the effect of role clarity on individual performance and emotional exhaustion and the moderating effect of interpersonal justice on the relationship between emotional exhaustion and individual performance. Additionally, this study investigated the moderated mediating effect of emotional exhaustion on the relationship between role clarity and individual performance. The results of this study can be summarized in four ways as follows. First, role clarity was found to have a positive effect on individual performance, meaning that employees with a high level of role clarity had better individual performance than those who did not. This result is consistent with previous research showing that role clarity improves task performance (Whitaker et al., 2007).

Second, role clarity was found to have a negative effect on emotional exhaustion. This means that employees with a high level of role clarity had lower emotional exhaustion than those without. This result is similar to those of previous studies showing that role clarity lowers burnout (Vullinghs et al., 2020). Third, interpersonal justice was shown to moderate the relationship between emotional exhaustion and individual performance. When interpersonal justice is high the positive relationship between emotional exhaustion and individual performance is weakened, and when it is low, the positive relationship between emotional exhaustion and individual performance is further strengthened. Fourth, emotional exhaustion was found to have a moderated mediation in the relationship between role clarity and individual performance. This means that role clarity not only directly affects individual performance but also indirectly through emotional exhaustion.

The results of this study have several theoretical implications. First, it reveals the positive effects of role clarity on emotional exhaustion and individual performance. When employees have a stronger understanding of their job-related objectives, tasks, and responsibilities, they achieve job performance with a sense of goals and endure greater job

demands, thereby reducing emotional exhaustion (Bakker & Demerouti, 2017; Lang et al., 2007).

Second, this study reveals that interpersonal justice moderates the mediating effect of emotional exhaustion on the relationship between role clarity and individual performance. If we analyze the mediating effect of emotional exhaustion in the relationship between role clarity and individual performance without reflecting interpersonal justice, which is a moderator, as shown in Model 5 in Table 3, emotional exhaustion has no significant effect on individual performance (β = .055, n.s.). It can be concluded that the mediating effect of emotional exhaustion is not significant.

However, when reflecting on interpersonal justice, emotional exhaustion had a significant positive effect on individual performance, as shown in Table 4 (B = .368, 95% CI = [.077/.628]. Furthermore, as shown in Table 5, it had a full mediating effect in the +1SD group, and partial mediating effects were verified in the -1SD group and the Mean group. Thus, to verify the mediating effect of the variable, it is important to determine whether the indirect effect of the mediating variable is moderated by the moderating variable.

Finally, this study verifies and presents the moderating effect of interpersonal justice on the relationship between emotional exhaustion and individual performance. Until now, it has been difficult to find studies in which the interaction between interpersonal justice and emotional exhaustion has a significant effect on individual performance. Furthermore, the positive relationship between emotional exhaustion and individual performance was weaker when interpersonal justice was high than when it was low and strengthened when interpersonal justice was low. Particularly, even if emotional exhaustion is high, it has a positive effect on individual performance if the supervisor's interpersonal justice to their subordinates is high. However, when the supervisor's interpersonal justice toward subordinates is low, individual performance is considerably lowered if emotional exhaustion is low.

The results of this study have several practical implications. First, companies should clarify

employees' roles in performing their jobs through an accurate division of duties. This is because, as the results of this study show, when companies clearly assign job roles to employees, their emotional exhaustion can be reduced, and job performance can be improved. Providing specific and clear goals for individual tasks is necessary to induce positive behavior and improve job performance. The role of supervisors is also critical in clarifying the role of employees. Supervisors can obtain the closest grasp of how the subordinates' job performance is progressing and the difficulties in job performance. Therefore, supervisor need to closely observe the role assigned to subordinates so that they do not have difficulty performing their duties owing to ambiguous roles and adjust the role if necessary.

Second, companies should aim to attract and foster leaders who act fairly well. Companies need to invest in designing appropriate selection processes to be able to identify applicants who are likely to respect and value their subordinates. As a fair atmosphere and positive interpersonal relationships allow employees to be more motivated and enthusiastic about individual performance (Decoster et al., 2021), companies must create a climate in which supervisors can lead their subordinates with respect and dignity. Additionally, companies should provide leadership programs through internal training, external expert training, and online training modules, so that they can demonstrate personal leadership to their subordinates.

Finally, companies should try to reduce the emotional exhaustion of their employees. Our findings demonstrate that emotional exhaustion is a negative antecedent factor that lowers the individual performance of employees. Given that employees often encounter significant emotional dissonance and energy depletion, particularly in direct interactions with customers, companies should proactively address and prevent these challenges. Strategies such as clarifying role divisions and implementing health promotion programs can effectively contribute to minimizing the emotional toll on employees.

2. Limitations and Directions for Future Research

Like all studies, this study has limitations that create opportunities for future research. First, it raises concerns about the convenience of using the same method by collecting research data from a single employee source. However, this study conducted a statistical test using Harman's single factor test to examine in more detail whether there was an identification method variance in the research data and revealed that the identification method convenience was not a problem. Additionally, the fact that this study proved the interaction effect of interpersonal fairness and emotional exhaustion further lowers the likelihood that hypothesis support is due to the convenience of the common method.

Second, this study has limitations in the design of the research model—cross-sectional analysis. According to the results of the study (see Table 4), emotional exhaustion had a significant positive effect on individual performance, which can be attributed to the employee's enthusiasm to the point of emotional exhaustion. Until emotions are depleted, there can be a positive effect on individual performance achievement, and from the moment emotions are depleted, there can be a negative effect on individual performance achievement. Therefore, in future studies, it will be necessary to analyze the relationship between the two variables by varying the timing of emotional exhaustion (t) and individual performance (t+1) without simultaneously analyzing the relationship between them.

Finally, this study has limitations in measuring individual performance variables. This study measured respondents' individual performance using the measurement questions of Van Woerkom and Sanders (2010), who modified the subjective performance scale of MacKenzie et al. (1991). For example, Whitaker et al. (2007) improved the objectivity of the response by allowing the supervisor to evaluate the employee's performance and measured the employee's task performance using seven questions of intra-role behavior by Williams and Anderson (1991). Future studies should have supervisors evaluate the individual performance of an employee.

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Appendix

List of Items by Construct

A.1. Role clarity

    1. I feel certain about the level of authority I have.

    2. Clear planned goals and objectives exist for my job.

    3. I know that I have divided my time properly.

    4. I know what my responsibilities are.

    5. I know exactly what is expected of me in my job.

A.2. Emotional exhaustion

    1. I feel emotionally drained from my work.

    2. I feel fatigued when I get up in the morning and have to face another day on the job.

    3. I feel burned out from my work.

    4. I feel used up at the end of the workday.

    5. Working with people all day is really a strain for me.

A.3. Interpersonal Justice

    1. My boss has treated me in a polite manner.

    2. My boss has treated me with dignity.

    3. My boss has treated me with respect.

    4. My boss has refrained from improper remarks or comments.

A.4. Individual performance

    1. I consider myself one of the best employees of this organization.

    2. I consider myself one of the most valuable employees of this organization.

    3. I am satisfied with my job performance.

    4. If I compare myself to my closest colleagues, I am better in my job.

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The Antecedents of Online Purchase Intention of Generation Z and Millennials toward Organic Cosmetics in an Emerging Economy*

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ABSTRACT

Purpose – Based on the extended theory of planned behavior (TPB), this study aims to investigate the antecedents of online purchase behavior toward organic cosmetics for Generation Z (Gen Z) and Millennials by focusing on the impact of subjective norms, health consciousness, trust, attitude, and intention.

Design/Methodology/Approach – A survey method using an online questionnaire was adopted to collect data from 341 Gen Z and Millennial consumers in Vietnam. The collected data were then analyzed using structural equation modeling (SEM).

Findings – The results of the study showed that, among antecedents, that attitude has the strongest impact on the purchase intention of online customers toward organic cosmetics, followed by trust and subjective norms. Interestingly, health consciousness has also been found to significantly impact Gen Z and Millennial online purchase intention toward organic cosmetics.

Research Implications – This paper extends the academic literature on purchase intention toward green products. More importantly, to the best of the authors' knowledge, this study is among the first to examine the antecedents of online purchase intention toward the organic cosmetics of Gen Z and Millennials in an emerging economy, Vietnam. The findings offer important implications for cosmetics companies, retailers, and other stakeholders to have deeper insights into factors influencing young Vietnamese consumer intentions toward purchasing organic beauty products online.

I. Introduction

The demand for cosmetics has been increasingly diverse and rich in products and categories. Cosmetics include, but are not limited to, toothpaste, shampoo, soap, lotion, and so on. These are daily necessities (Sahota, 2014). However, chemical compounds and microplastics found in cosmetics have had harmful effects on the natural world and human health. Therefore, in recent decades, consumers have paid more attention to quality of life and sustainable lifestyles. Increasingly, they are concerned about the effects of harmful chemical compounds in cosmetics on their health and are aware of the direct or indirect harmful effects of such compounds on the natural environment and personal health before making purchasing decisions (Sahota, 2014). Consequently, the trend to produce cosmetics derived from natural or halal cosmetic products meets the health and safety requirements of consumers, environmental friendliness, and business ethics, it also promotes the development of the cosmetic industry in a sustainable way (Al-Banna & Jannah, 2022; Matić & Puh, 2016; Sahota, 2014; Septiarini et al., 2022). Organic or natural products are extracted from agricultural products that do not use pesticides or chemical fertilizers, stemming from the belief that plants grown with green manure and without chemicals are of better quality. These organic products are grown, sold, or processed without synthetic chemicals, chemical fertilizers, fungicides, herbicides, growth hormone pesticides, or genetic variation.

In 2021, almost 7% of all retail sales in Vietnam were generated from e-Commerce, which is greater than $US 13.7 billion. Over the past ten years, the country has witnessed this sector increase gradually. More than half of the Vietnamese population made more online purchases of consumer products in 2021. Not only has there been an increase in the number of people making online purchases, but Vietnam's e-commerce platforms also have seen significant growth in average customer spending tremendously (Nguyen, 2022). Vietnam was ranked the third-largest Internet economy in Southeast Asia, after Thailand and Indonesia, with a total market value of $US 23 billion in 2022 (Google, Temasek, and Bain & Company, 2022). While e-Commerce accounted for the lion's share, other segments of the Internet economy in the country have grown rapidly in recent years. For example, the COVID-19 pandemic has made online entertainment the new normal for individuals in a range of age groups, leading to a substantial increase in the value of the online market in Vietnam. Additionally, since the pandemic, adjustments in customer preferences toward online goods and services have benefitted ride-hailing, food delivery, and online travel.

The Asia-Pacific region is the largest market for cosmetics consumption. According to forecasts, the market is expected to reach USD 211.7 billion by 2032, and Vietnam has steadily developed into a potential cosmetic market for cosmetic manufacturers (The Brainy Insights, 2022). Because of the increasing demand of consumers, the cosmetic import turnover of Vietnam has more than doubled, from approximately $US 355 million in 2010 to more than $US 790 million in 2018 (Statista, 2020). The best-selling cosmetic products include perfume, makeup, and skin care products. Compared to other nations in the Southeast Asia region, Vietnamese health and beauty retailers have the largest market size (Statista, 2020). Furthermore, a report on the Euromonitor International Vietnamese cosmetic market (Euromonitor International, 2020) showed that although the demand for organic cosmetics by Vietnamese consumers has decreased due to the impact of COVID-19, it remains a large market. If beauty technologies were previously favored with chemicals because of the rapid effects, the trend of beauty with natural extracts has lately become more popular, even in Vietnam. Chemical compounds have gradually been substituted with purely natural materials (fruits, essential oils from herbs, honey, seaweed, or saffron). Ingredients extracted from nature do not contain artificial ingredients (that is, colorants and alcohol). In particular, Vietnam is a young country due to age structure, and the younger generation is often

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known to be more interested in social issues, such as green consumption (Lee, 2020). Millennials (born between 1981 to 1996) and Gen Z (born between 1987 to 2013), representing 47% of the population, show great interest in social issues such as equity, environmental issues, and social responsibility, and are becoming crucial forces contributing to Vietnam's current digital economic development. According to McKinsey & Company (2021), these so-called digital natives are expected to account for around 40 percent of Vietnam's consumption by 2030. Some researchers suggest that young people that are more aware and interested in environmental issues will have more positive attitudes toward green or natural products (Wang et al., 2019). Accordingly, because of their prospective demands for products derived from natural ingredients, it is extremely crucial for enterprises and marketers to understand the purchase intention of young consumers toward green cosmetics in Vietnam (Limbu et al., 2022).

Furthermore, according to statistics, in 2019 and 2020, e-Commerce revenue in Vietnam increased dramatically, showing that consumers have seen many changes in their habits and buying behaviors for goods and products. The percentage of consumers that purchase online has increased. Instead of traditional shopping, consumers have mostly switched to online shopping, mainly on websites or e-commerce trading platforms. According to information revealed in the White Book on Vietnam's E-Business 2020, the percentage of consumers purchasing via online channels or e-commerce trading platforms was up to 74%, and the percentage of consumers purchasing via online forums and social networks reached only 33%. In 2019, the percentage of consumers purchasing online accounted for 57% and 52% in website channels and e-commerce trading platforms, respectively. These are solid foundations for e-Commerce development and create opportunities for businesses to transform into online business models. In addition, purchasing cosmetics online has become more popular recently, especially during the COVID-19 pandemic, when consumers were asked to stay home. Beauty products ranked third in popularity on e-commerce trading platforms (Lazada, Shopee, Tiki), after fashion and electronic products. According to Q&Me research results from Q&Me (2020), more than 70% of cosmetic users made online purchases every day.

Hence, cosmetics derived from organic ingredients are rising and promise to be more explosive through e-commerce channels. In addition, young consumers, the primary target of most enterprises, currently have more purchasing power than ever, with a significant influence on family and friends (Flurry & Swimberghe, 2016; Le et al., 2022). However, although there has been much research on consumer online purchase intention toward organic products such as vegetables and foods, studies on drivers of Millennial and Gen Z online purchase intention toward organic cosmetics in an emerging country such as Vietnam are scarce. The article, therefore, aims to investigate the antecedents of Millennial and Gen Z online purchase intention toward organic cosmetics. In detail, we aim to answer the following question: What factors drive consumers to online purchase intention toward organic cosmetics? To answer this, factors in the theory of planned behavior and the other two factors from the literature (trust and health consciousness) are first identified. Then, we conduct a quantitative study to examine several relationships between the constructs in the proposed research model. The findings of the study provide several theoretical and practical implications. In particular, the study offers cosmetic manufacturers, traders, retailers, and marketers a better understanding of factors that determine purchasing intent to promote marketing campaigns and management to engage consumers in purchasing behavior.

The remainder of this study is divided into the following sections. First, the authors present the theoretical background, followed by developing the hypotheses. Next, we describe the research methodology adopted to test the proposed hypotheses. Then, a discussion of the findings is provided. In the conclusion, we offer relevant theoretical and managerial implications from the

research findings and present the limitations and new directions for further studies.

II. Literature Review for Hypotheses Development

1. Literature Review

1.1. The Theory of Reasoned Action (TRA)

According to the theory of reasoned action (TRA) of Fishbein and Ajzen (1977), the best antecedent of whether or not a person actually engages in a certain behavior is their intention to engage in that behavior. Intention involves motivational factors that impact a certain behavior. To put it another way, the stronger the intention to perform the behavior, the more likely it is to be undertaken (Fishbein & Ajzen, 1977). Intention, in turn, is determined by subjective norms and attitude. In other words, the more positively a person engages in a given behavior, and the more they perceive that behavior as being crucial to family, friends, or society, the more likely they are to engage in the behavior.

1.2. The Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is an extension of the TRA developed by Fishbein and Ajzen (1977). The construct of perceived behavioral control was added to the model by Ajzen (1991). The TPB was adapted and used as a conceptual model to predict intentions and behaviors. The literature review revealed that some studies had investigated common factors influencing individual intention, such as subjective norms and attitudes in the TRA and TPB. Though these theories were developed in the 1980s, they are still adopted to describe, explain, and predict human intention in different sciences (Pena-Garca et al., 2020). TPB has been selected as a theoretical basis, with research objectives related to intention to buy in the context of e-Commerce (Hasbullah et al., 2016, Nguyen et al., 2019, Pena-Garca et al., 2020).

Based on TRA and TPB theories, the constructs of health consciousness and trust were added to the research model to explain the intrinsic factors of consumers that influence attitude and intention to purchase organic cosmetics online. The proposed conceptual model is presented in Figure 1, and the hypothetical relationship between the constructs is shown in the next section.

Fig. 1. Proposed Research Model
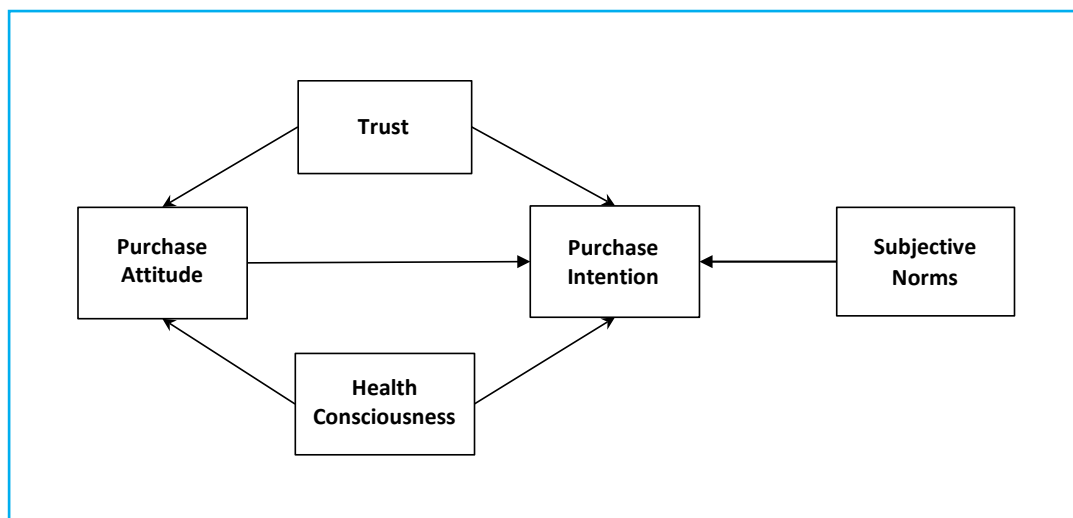
2. Hypotheses Development

2.1. Purchase Attitude and Purchase Intention

Attitude refers to the level to which an individual makes a negative or positive assessment of behavior (Fishbein & Ajzen, 1977). Attitude is learned and developed over a certain period (Lien & Cao, 2014), and can change over time when individuals have new knowledge of what they are evaluating (Shaouf et al., 2016). The results of many empirical studies have confirmed that attitude has a positive effect on consumer behavior toward online shopping (Gu et al., 2021; Hasbullah et al., 2016; Nguyen et al., 2019). In the context of cosmetics shopping, attitude is understood as the evaluation of consumer behavior in purchasing organic cosmetics, following the work of Ghazali et al. (2017). Similarly, studies on intention to purchase organic products or cosmetics emphasize attitude as a determinant of consumer purchase intention (Arli et al., 2018; Hsu et al., 2017). A recent study by Suparno (2020) posited that attitude had a strong impact on consumer intention to buy natural cosmetics. Additional research in the context of emerging markets, conducted by Lavuri et al. (2022), used dual factor theory and the SOR paradigm, which revealed that attitude mediated the intention to purchase luxury organic cosmetics. Therefore, the following hypothesis was formulated.

> **H1:** Attitude will have a positive impact on intention toward online organic cosmetic purchasing.

2.2. Subjective Norms and Purchase Intention

Ajzen (1991) posited that a subjective norm is an individual's perception of how to behave under social norms. More specifically, subjective norms refer to the perception of an individual as to what should or should not be done, with a reward or a punishment associated with the behavior (Pena-Garca et al., 2020). Subjective norms are determined by the beliefs that influencers hold.

If consumers believe that people that influence them feel that purchasing organic products is a good idea, their attitudes and intentions toward purchasing these kinds of cosmetics will be higher. Subjective norms are a factor with a significant impact on intention toward organic product purchase (Al-Swidi et al., 2014; Arli et al., 2018; Ghazali et al., 2017; Kumudhini & Kumaran, 2020; Smith & Paladino, 2010) and online shopping intention (Hasbullah et al., 2016). Recent studies confirmed that subjective norms significantly impact the intention to purchasing organic cosmetics (Hsu et al., 2017). Therefore, we might assume that the more consumers are influenced by those around them, the more they will be willing to purchase eco-friendly products. This leads to the following hypothesis.

> **H2:** Subjective norms will have a positive impact on the intention toward online organic cosmetics purchasing.

2.3. Health Consciousness and Purchase Attitude and Intention

According to Xie et al. (2015), the health aspect of organic consumption is often related to the absence of chemicals used in agriculture (that is, pesticides or chemical-based fertilizers). Consumers with a high interest in health are more interested in a healthy lifestyle, and more willing to participate in activities to maintain health (Kim & Chung, 2011). Specifically, consumers with high health consciousness will likely consider whether a product has positive effects on their body or skin, so they will be more concerned about the ingredients of the product than consumers less concerned about health. Several previous studies have shown that health benefits are among the most influential drivers of natural product consumption. Han and Chung (2014) showed that perceived health benefits have a significant effect on attitude toward purchasing organic cotton clothing. Their findings were supported by Ghazali et al. (2017), who asserted that health consciousness had a positive influence on the attitude of customers

toward purchasing eco-friendly cosmetics. In other words, the reason people want to purchase green products is that they find them useful to their health. Furthermore, during and after the COVID-19 pandemic, to ensure health and safety, more consumers intended to shop online (Gu et al., 2021). These arguments offer a rationale for these two hypotheses.

H3: Health consciousness will have a positive impact on attitude toward organic cosmetic purchasing.

H4: Health consciousness will have a positive impact on intention toward online organic cosmetic purchasing.

2.4. Trust and Attitude and Intention

Trust, in business, is the consumer perception of the trustworthiness of a product, brand, or service (Flavian et al., 2006). Trust in e-Commerce is the degree of trust that indicates the intention and behavior of a consumer during a transaction (Le & Hoang, 2020; Wijoseno & Ariyanti, 2017). Trust plays an important role in e-commerce because consumers cannot see, touch, and directly check the quality of a product (Nguyen et al., 2019). In addition, consumers have concerns about the security and safety of information when making online payments (Lee & Turban, 2001). Trust in shopping online includes trust in the transaction system in terms of safety, the confidentiality of personal information (Kim et al., 2004), the feedback of vendors (Xiao et al., 2015), and information posted on the website (Ogonowski et al., 2014). Therefore, trust is considered a determining factor in the intention of consumers to buy online (Butt et al., 2016; Çelik & Yilmaz, 2011; Jarvenpaa et al., 2000; Le & Hoang, 2020). The findings of Choi and Lee (2019) and Tang and Huam (2021) confirmed that trust has the strongest influence on consumer intention to buy cosmetics online. However, Lavuri et al. (2022) found that trust had a significantly negative impact on consumer attitude toward luxury organic beauty

products. Based on the contradictory results of previous studies, the following set of hypotheses is proposed.

H5: Trust will have a positive impact on attitude toward online organic cosmetic purchasing.

H6: Trust will have a positive impact on intention toward online organic cosmetic purchasing.

III. Methodology

1. Questionnaire Design

The proposed research model consists of six constructs: subjective norm, health consciousness, trust, attitude, and intention toward online organic cosmetics purchase. Except for the construct of purchasing behavior, the remaining five are evaluated based on a five-point Likert scale, ranging from completely disagree (1) to completely agree (5).

The construct of subjective norms was developed from the work of Ghazali et al. (2017) and Zhang et al. (2018), while the construct of health consciousness references Ghazali et al. (2017) and Tarkiainen and Sundqvist (2005). Additionally, the trust construct is based on the scales of Nguyen et al. (2019) and Choi and Lee (2019). The two constructs related to attitude and intention toward purchasing organic cosmetics online were obtained from studies by Ghazali et al. (2017), Nguyen et al. (2019), and Suparno (2020).

2. Data Collection and Sample

Due to growing up in the era of information technology, the essential things in the lives of Gen Z and Millennials are the Internet (21%) and mobile phones (45%). Furthermore, because social media has become an essential part of their lives, they use these tools for various purposes, such as connecting with family and friends (93%) and keeping up to date with what is happening

around them (73%). In particular, they also use social networks to report daily activities (42%) and express thoughts and beliefs (55%) (VECOM, 2021). According to Lee (2020), Gen Z and Millennials have an increasing influence on the consumption trends of Vietnamese households. Therefore, in the scope of this study, the survey sample consists of Millennials and Gen Z aged 18 to 40 years living in Hanoi, the capital of Vietnam, with high population density, shopping demand, and Internet use.

We used self-administered questionnaires to collect data to test the hypothesized relationships. Before sending questionnaires to respondents, we invited two experts with experience in marketing and e-commerce to verify the wording, logical consistency and contextual relevance. After making some changes and amendments, a pre-test was executed with a random sample of twenty people to guarantee the validity and reliability of the constructs. The convenience sampling method was adopted based on the convenience or accessibility of the survey respondents in online survey questionnaires through shopping groups on Facebook, emails, or text messages. Respondents that received the questionnaire were told that responses would remain confidential because they were used only for academic purposes. The total number of completed questionnaires was 380. After cleaning the data and removing invalid answers, 341 responses were used for further analysis.

Regarding the age structure, the respondent ages ranged from 18 to 40 years, belonging to Millenials and Gen Z. 53.7% of the respondents were between the ages of 30 and 40, and the others, 46.2%, were between 18 and 29. Regarding gender, female consumers represented 84.8%, much higher than male consumers at 15.2%. This large gender difference is because women tend to pay more attention to beauty care than men, so women were more willing to participate in the survey. Regarding the education level, most informants had university degrees, accounting for 66.0%. In terms of income, monthly income also varied from less than 10 million VND to over 30 million VND. However, most consumers had an income of between 10 million and 19 million VND/month (accounting for 45.2%) and less than 10 million VND/month (accounting for 27.3%). The sample profile is illustrated in Table 1.

Table 1. Sample Profile

Demographic Variable		Frequency	%
Gender	Male	51	15.2
	Female	289	84.8
Age	18-29	158	46.3
	30-40	183	53.7
Education	High School Undergraduate	86	25.2
	Undergraduate	225	66.0
	Graduate	30	8.8
Income	Less than 400 U.S. dollar	93	27.3
	400 – 800 U.S. dollar	154	45.2
	800 – 1200 U.S. dollar	76	16.4
	More than 1200 U.S. dollar	38	11.1

IV. Results

1. Descriptive Statistics and Reliability

Table 2. Descriptive Statistics and Reliability

Construct	Mean	Cronbach's Alpha
Subjective Norms	2.87	0.88
Health Consciousness	3.92	0.74
Trust	3.28	0.82
Attitude toward Online Organic Cosmetics Purchasing	3.55	0.86
Intention toward Online Organic Cosmetics Purchasing	3.57	0.87

A structural equation model (SEM) was utilized for data analysis with SPSS 24 and AMOS 24. The statistical process consisted of a measurement model analysis and a structural model analysis. First, this study used descriptive statistical analysis to calculate the mean value of the constructs. Table 2 reveals the mean values in ascending order: subjective norms and trust (M = 2.87 and M = 3.28 respectively), attitude toward online organic cosmetics purchase (M = 3.55), intention toward online organic cosmetics purchase (M = 3.57), and health consciousness (M = 3.92). The results indicate that the respondents had relatively high health consciousness. Then, a reliability analysis was executed to generate Cronbach's Alpha value (α). According to Hair et al. (2010), construct reliability is satisfied when the α value is greater than 0.7. All construct α values were greater than

0.7 (ranging from 0.74 to 0.88), indicating a good internal consistency (see Table 2).

2. Structural Equation Model

According to Hair et al. (2010), the goodness of fit of the model is reflected through indexes such as chi-square normalized by degrees of freedom ($\chi 2/df$), the comparative fit index (CFI), goodness-of-fit index (GFI), NFI (normed fit index), AGFI (adjusted goodness of fit index), and RMSEA (root mean square error of approximation). The model fit is considered good when the value of $\chi 2/df \leq 5$, and the values of GFI, AGFI, TLI, and CFI ≥ 0.9, and RMSEA ≤ 0.08. The results of CFA analysis, illustrated in Table 3, show that the research model had a good fit for the data.

Table 3. Goodness of Fit

Indices	Value	Acceptable Value
$\chi 2/df$	1.542	≤ 5
GFI	0.926	≥ 0.9
AGFI	0.90	≥ 0.9
TLI	0.965	≥ 0.9
CFI	0.972	≥ 0.9
RMSEA	0.040	≤ 0.08

In CFA analysis, convergence validity, discriminant validity, and reliability are tested. If the scales do not guarantee reliability and accuracy, it will cause deviations in the analysis results, and the obtained numbers will not represent the meaning of the data and reality (Hair et al., 2010). The indicators commonly used to test reliability and accuracy in CFA analysis are standardized factor loadings (FLs), composite reliability (CRs), and the average variance extracted (AVE) of factors. These weights are significant if the value of FLs is higher than 0.5 and statistically significant (P-value ≤ 0.05), the value of CRs is higher than 0.6, and AVEs are higher than 0.5.

Table 4. Convergent Validity and Discriminant Validity

Construct	FLs	CR	AVE	MSV	MaxR (H)	Attitude	Subjective Norms	Trust	Intention	Health Consciousness
Attitude	0.71-0.80	0.876	0.586	0.456	0.879	0.766				
Subjective Norms	0.76-0.86	0.891	0.673	0.357	0.899	0.477***	0.820			
Trust	0.69-0.75	0.806	0.509	0.454	0.922	0.474***	0.285***	0.828		
Intention	0.78-0.82	0.876	0.639	0.456	0.913	0.501***	0.242***	0.374***	0.828	
Health Consciousness	0.63-0.79	0.758	0.513	0.303	0.913	0.352***	0.421***	0.519***	0.286***	0.832

The discriminability is satisfactory if the square root value of AVE for each construct is larger than its estimated correlation coefficients with other constructs, and the value of AVE is larger than MSV (maximum partial variance). The results of construct reliability and discriminant validity are shown in Table 4. After removing HC1 and HC5 of the construct of health consciousness, FLs ranged greater than 0.5, CRs exceeded 0.6, AVEs ranged from 0.509 to 0.674, and the value of AVEs was greater than MSVs. Therefore, it can be confirmed that all constructs in the research model have good convergent and adequate discriminant validity.

3. Hypotheses Testing

A structural model was used to test the seven proposed hypotheses. Indicators were satisfied when χ^2/df = 1.642; GFI = 0.927; AGFI = 0.903; TLI = 0.965; CFI = 0.971; and RMSEA = 0.043. These fit indicators confirmed an adequate model fit between the proposed research model and empirical data. The results of the path analysis presented in Figure 1 and Table 4.1 show that all paths have statistically significant relationships.

The findings reveal that attitude has the strongest influence on the intention to buy organic cosmetics (β = 0.320, p-value < 0.001), followed by the factors of trust (β = 0.300, p-value < 0.001), subjective norms (β = 0.256, p-value < 0.001), and health consciousness (β = 0.137, p-value < 0.005), respectively. Therefore, H1, H2, H4, and H6 are accepted. The research results confirm that attitude is the most important factor leading to consumer intention to purchase organic cosmetics online, affected by trust and health consciousness. These two factors have positive effects on consumer attitude toward the purchase of organic cosmetics online with standardized β values of 0.531 (p < 0.001) and 0.183 (p < 0.05), respectively. Thus, H3 and H5 are accepted.

Table 5. SEM Results and Hypotheses Testing

	Hypotheses			B	S.E	t-Value	p-Value	Results
H1	Attitude	→	Intention	0.320	0.063	5.450	***	Supported
H2	Subjective norms	→	Intention	0.256	0.048	4.591	***	Supported
H3	Health consciousness	→	Attitude	0.183	0.055	3.342	***	Supported
H4	Health consciousness	→	Intention	0.137	0.049	3.046	**	Supported
H5	Trust	→	Attitude	0.531	0.068	8.077	***	Supported
H6	Trust	→	Intention	0.300	0.079	4.290	***	Supported

Note: ***$p<0.0001$, **$p<0.005$.

V. Discussion

The results of this study provide theoretical insight and practical initiatives for intention toward online organic cosmetics purchasing and form a foundation for further research into green purchasing behavior.

1. Theoretical Implications

The findings have shown that trust has the strongest influence on the intention of the consumer to buy organic cosmetics (β = 0.531). Furthermore, trust also has a direct positive impact on the intention of consumers toward purchasing organic cosmetics online with β = 0.300. The results are consistent with the studies of Butt et al. (2016), Çelik and Yilmaz (2011), and Jarvenpaa et al. (2000), which found that consumer trust is a main driver of online purchasing intention. This result also aligns with the previous studies on online cosmetics purchasing intention by Choi and Lee (2019) and Tang and Huam (2021). The findings confirm that subjective norms and health consciousness have a positive influence on consumer intention to purchase organic cosmetics online with β values of 0.256 and 0.183, respectively. The findings echo previous studies by Hsu et al. (2017) and Limbu et al. (2022), which demonstrated the subjective norms - purchase

intention relationship and the health consciousness – purchase intention relationship in the context of organic cosmetics or green products. Another crucial finding emphasizes the role of attitude, as it has the strongest influence on consumer intention to buy organic cosmetics (β = 0.320). These findings are in line with previous studies by Arli et al. (2018), Hsu et al. (2017) and Suparno (2020), who posited that the more positive the consumer attitude, the more likely they are to buy a product and enact purchasing behavior.

Our findings have reinforced the correctness of the theoretical models of TRA and TPB and provide relevant theoretical implications. First, the TPB is one of the most dynamic predictive models of purchase intention, which can be considered a result of various psychological driving forces. Previous studies have proposed extensions of the TPB model. However, an integrated proposal that includes trust and health consciousness has yet to be formulated in the context of online purchasing in an emerging country, Vietnam. Additionally, our study enriches the comprehensive literature on the consumption of environmental products by specifically investigating organic cosmetics. Our findings confirm that the intention toward purchasing organic cosmetics online is facilitated by a strong attitude and subjective norms. Furthermore, our results posit that attitude and intention toward online organic cosmetics

purchasing are stimulated by strong health consciousness. In fact, when a person is conscious of their health, they tend to buy organic products. More specifically, the results of this study shed light on the importance of trust. If a consumer trusts information published on a company's website as well as their products, secure policies, or after-sales service, he/she will be more likely to buy organic cosmetics online.

2. Managerial Implications

With a population of over 99 million in 2023, Vietnam has a young and dynamic population with 72.1 million Internet users (73.2% of the population). The number of people actively engaging in internet usage has increased rapidly, especially among Millennials and Gen Z. Like their counterparts worldwide, these young consumers are increasingly concerned about the environment and their health. They are more likely to support products and brands that demonstrate eco-friendliness and sustainability. This is an excellent opportunity for the online retail promotion of organic cosmetics. Therefore, understanding the online purchasing intention of Millennials and Gen Z towards organic cosmetics is exceptionally vital for cosmetics manufacturing companies and cosmetics retailers. Based on the findings, some managerial implications are provided. First, managers must increase customer trust in products by improving the quality of products and paying attention to after-sales service. Compared to traditional offline shopping, online buyers cannot truly feel and experience the product before purchasing. Therefore, more detailed specifications of online products can eliminate consumer reservations and hesitation to a certain extent, increasing willingness to purchase. Second, e-commerce companies should be concerned about the security of the information of consumers so that they always feel safe, transparent, and well-protected when shopping online. The most common security concerns are monetary theft, exploitation of personal data, financial fraud, and unsecured services.

Therefore, the higher the degree of the adoption of new security solutions, such as HTTPS, SSL certificates, and secure payment gateways, the higher the willingness of customers to make online purchases. Third, enterprises should cooperate with health and environmental organizations to raise awareness of organic cosmetics for consumers, resulting in purchasing intention and behavior toward green products. The novelty of more environmentally friendly and standard-compliant products can resonate with consumers and attract purchases. In addition, managers should promote mass communication campaigns through newspapers, radio, television, and social networks so that consumers are more concerned with health. The content can include basic knowledge or understanding of organic cosmetics. Moreover, the relationship between environmental protection or health protection and the use of organic cosmetics should be emphasized. Additionally, it is also necessary for consumers to be fully aware of cosmetics of organic origin that are only complementary products for their beauty needs. They cannot be substituted for nutritional supplements that enhance skin beauty through proper diet and rest. However, the results of the study confirmed that subjective norms are the third factor determining the purchasing intention toward organic cosmetics. Therefore, communication campaigns for organic cosmetics consumption also motivate consumers that find organic beauty products ideal to share information with families, friends, or colleagues. As a result, green cosmetic consumption behavior becomes a subjective norm.

VI. Conclusion

This study is among the first to investigate factors influencing the Vietnamese customer online purchase intention of organic cosmetics. It was based on the TPB model by comprehensively examining other antecedents of organic cosmetics purchase intention, including trust and health consciousness. The study's results demonstrated that attitude has the most decisive influence on

the purchase intention of online customers toward organic cosmetics, followed by trust and subjective norms. Interestingly, among the antecedents, health consciousness has the lowest influence on Gen Z and Millennial online purchase intention toward organic cosmetics.

This study still has several caveats that can be addressed in future studies. First, most respondents were Gen Z and Millennials, and this, along with the convenience sampling method, may limit the representativeness of the population. Therefore, further comparative studies should be conducted to investigate differences between various age groups of consumers. Second, in terms of research methods, only a quantitative research method (SEM model) was used in this study. Future studies can combine survey methods with experiments or observation. Third, the model was tested using data collected only in Vietnam. Given that the purchasing intention in Vietnam may differ from that of other cultures, the model should be further tested in other nations, or comparative studies should be carried out. Finally, though the model explained more than 70% of the variance in consumer behavior, there are still other factors that influence online purchasing behavior toward organic cosmetics. Therefore, future studies should include other drivers in research models, such as product origin, product quality, and perceived values.

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Analyzing Consumer Engagement in Electronic Waste Products Reverse Logistics: Extending the Planned Behavior Theory

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ABSTRACT

Purpose – This study extends the theory of planned behavior from a consumer perspective to investigate consumer willingness and behavior in electronic waste products reverse logistics, along with the underlying influencing factors.

Design/Methodology/Approach – Based on existing research, this paper has developed a model and hypotheses regarding consumer intentions to participate in electronic waste products reverse logistics and the influencing factors. Subsequently, this study conducted a survey of 355 Chinese consumers aged 20-50 years and used SmartPLS to analyze the relevant data for hypothesis validation.

Findings – Results show that consumers' green attitudes and green subjective norms have a positive impact on their willingness to participate in electronic waste products reverse logistics. And perceived behavioral control only exerts a positive influence on their participatory behavior. On the other hand, concerns about privacy breaches often hinder their willingness and behavior to participate. Moreover, the findings also indicate that consumers' willingness to participate positively influences their actual participation behavior.

Research Implications – This study predominantly examines the positive and negative subjective factors influencing consumers' intentions and behaviors in participating in reverse logistics for electronic waste products. Based on the findings, we suggest fostering consumer awareness of electronic waste through various channels, including social media, and maintaining ongoing promotional campaigns to enhance environmental awareness and consumer engagement. Additionally, relevant firms should bolster consumer privacy protection, while the government should enhance regulatory oversight and introduce incentive policies to encourage businesses to increase investments in information security, thereby boosting consumer confidence in participation.

Keywords: consumer participation willingness, electronic waste products reverse logistics, influencing factor, participation behavior, planned behavior theory
JEL Classifications: D12, L80, M10, M21

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I. Introduction

In today's information-driven society, electronic and electrical equipment have become indispensable in our daily lives. However, this reliance on electronic equipment has resulted in the generation of a significant volume of discarded electronic products. In 2019, the global generation of e-waste reached approximately 54 million tons. Over the past few decades, electronic waste (e-waste) products generation has accelerated significantly, making it the fastest-growing waste stream globally. This can be attributed to various factors, including rising living standards, increased demand for consumer goods, greater purchasing power, and the widespread availability of electronic products. According to a study by Tiseo (2023), global e-waste generation is projected to grow by nearly 30% annually if the current trend persists, potentially reaching alarming levels by 2030.

In many developing nations, only about 20% of discarded electronics are recycled through formal, regulated channels, with most of the e-waste being managed informally or ending up in landfills. Even within the European Union, which is often regarded as a global leader in e-waste recycling, only 35% of e-waste is recycled and reused. These relatively low recycling rates result in a significant yearly volume of e-waste requiring proper disposal, leading to the waste of a substantial number of recyclable materials. As emphasized by Ding and Lee (2022), electronic waste products contain various hazardous substances that can easily contaminate the ecological environment if not adequately treated or handled. Conversely, waste electronic products also contain valuable materials such as silver, gold, and copper, which possess significant reuse value when properly recycled and treated. Therefore, the urgent issue of addressing reverse logistics for e-waste products requires immediate attention.

In response to the demands of the carbon-neutral and sustainable development era, a growing body of research has been conducted on e-waste products reverse logistics in both academia and industrial domains. Islam and Huda (2018) conducted a comprehensive review of e-waste reverse logistics and closed-loop supply chains, categorizing research into four main areas: reverse distribution design and planning, decision-making and performance assessment, conceptual frameworks, and qualitative research. Patil and Ramakrishna (2020) provided a comprehensive analysis of global e-waste legislation, assessing the strengths and weaknesses of various legislation worldwide. Furthermore, researchers such as Pant et al. (2012), Jujun et al. (2014), and Sanito et al. (2021) conducted experimental analyses of specific e-waste recycling technologies. In the field of business management, increased research has been conducted on how companies view and implement reverse logistics for e-waste products (e.g., Ding & Lee, 2022; Kumar Singh et al., 2022; Truc Doan et al., 2018). Although numerous related studies exist, there remains a need for further research into consumer willingness and behavior regarding participation in e-waste reverse logistics. Although the government and enterprises are essential for the reverse logistics of e-waste products, consumers are the main force behind the use of electronic and electrical products. E-waste reverse logistics cannot be separated from consumer participation (Gonul Kochan et al., 2016). Moreover, understanding the behaviors and intentions of consumers regarding e-waste products is beneficial for companies in designing effective reverse logistics management. This not only enhances the company's standing from environmental and regulatory perspectives but also offers economic benefits and a competitive advantage (Guide et al., 2003). Therefore, it is imperative for firms to gain insights into consumers' willingness and behavior to participate in the reverse logistics of e-waste products.

Additionally, existing research on the factors influencing people's readiness to recycle e-waste products predominantly focuses on positive factors (e.g., Dixit & Badgaiyan, 2016; Mahmud et al., 2020; Wang et al., 2011). Yet it is equally necessary to comprehend the negative influencing factors. Furthermore, while external influences such as

incentives, publicity, and recycling convenience have been extensively studied and validated (e.g., Mahmud et al., 2020; Wang et al., 2019), the internal negative factors impacting willingness to participate and behavior, such as subjective consumer initiatives, require further elucidation. Among these factors, emotional attachment to electronic products and privacy concerns emerges as the most significant obstacles preventing consumers from participating in e-waste reverse logistics. Furthermore, a more comprehensive analysis can be achieved by integrating positive factors such as environmentally friendly attitudes. By understanding both the positive and negative influencing factors, companies can adopt more comprehensive measures to promote consumers' intention to participate in e-waste reverse logistics. Hence, this study extends the theory of planned behavior from a consumer perspective to investigate consumer willingness and behavior in e-waste reverse logistics, along with the underlying influencing factors.

II. Literature Review

1. Theory of Planned Behavior

Over the years, numerous theories and models have emerged to investigate behavioral intentions and actions, with Ajzen's (1991) Theory of Planned Behavior (TPB) standing out as one of the most frequently employed. Moreover, the TPB has garnered widespread attention in various academic domains, including health sciences, environmental sciences, business and management, and educational research. According to the TPB, behavior is influenced by three primary factors: beliefs about expected outcomes (behavioral beliefs), beliefs about normative expectations (normative beliefs), and beliefs about facilitating or hindering factors (control beliefs). Within their respective aggregates, behavioral beliefs give rise to either favorable or unfavorable attitudes towards a specific behavior; normative beliefs lead to perceived social pressure or subjective norms;

and control beliefs lead to perceived behavioral control or self-efficacy. In general, the more favorable the attitudes and subjective norms, and the higher the perceived control, the greater the willingness to engage in the behavior. Ultimately, when individuals possess sufficient control over their behavior, they are more likely to translate their intentions into actions when opportunities arise. Thus, intentions are regarded as direct antecedents of behavior (Ajzen, 1991; Bosnjak et al., 2020). Given the interplay of individual, social, and environmental factors, the TPB emerges as a valuable and potent tool for predicting readiness and behavior.

Applying this theory, Soorani and Ahmadvand (2019) investigated the food management behaviors of Iranian consumers. Their findings affirmed that the willingness to reduce household food waste could be predicted by individual's attitudes, subjective norms, and feelings of guilt. Similarly, Kamalanon et al. (2022) employed this theory to evaluate consumers' willingness to purchase and their actual behavior towards green products in Taiwan. Moreover, Liu, Y. et al. (2023) integrated the application of TPB with the Stimulus-Organism-Response (S-O-R) framework to research the factors influencing consumers' retaliatory purchases following the closure of Shanghai, China. Using this theory, Medina et al. (2022) verified the significant influence of personal attitudes and subjective norms on students' entrepreneurial intentions through a survey study in Philippines. In conclusion, the validity of the Theory of Planned Behavior has been well-established. In the context of this study, the primary aim is to employ this model to examine the influence of attitudes, subjective norms, and perceived behavioral control on consumers' willingness to participate in e-waste products reverse logistics and their participation behaviors, with the adverse effects of emotional values and privacy concerns. In this context, it is necessary for us to conduct a more in-depth analysis of the current status of electronic product production and recycling for abandonment.

2. Reverse Logistics Management of E-waste Products

Electronic waste products, commonly referred to as 'e-waste', encompasses a broad spectrum of electrical and electronic devices that are no longer used by their owners (Widmer et al., 2005). These devices typically include plugs, cords, and electronic components. Examples of common sources of e-waste include televisions, laptops, mobile phones, and a variety of household gadgets ranging from air conditioners to children's toys. E-waste is also referred to as waste electrical or electronic equipment (WEEE). While, in the past, e-waste primarily consisted of electronic products rendered obsolete due to damage or loss of functionality, recent technological advancements and improved living standards have broadened this definition. Nowadays, even functional electronic devices can be categorized as e-waste if they are no longer considered satisfactory or relevant to consumers. Consequently, e-waste has emerged as one of the fastest-growing segments of the global waste stream, surpassing other waste categories (Herat, 2007).

Currently, the global e-waste situation presents two primary challenges. First, there is substantial amount of e-waste generation worldwide, but recycling rates remain alarmingly low. Second, although developed nations have relatively high recycling rates, constant advancement in technology has led to an increase in per capita e-waste generation. In contrast, developing countries exhibit lower per capita e-waste generation but contribute significantly to the total volume (Widmer et al., 2005). These observations align with the data provided by the Global E-Waste Monitor 2020. According to this report, in 2019, the world generated a staggering 53.6 metric tons of e-waste, of which a mere 9.3 metric tons (17.4%) were collected and recycled, leaving a substantial 82.6% (44.3 million tons) unaccounted for. The report further underscores that total e-waste generation has surged by 9.2 million tons since 2014 and is projected to reach 74.7 million tons by 2030, indicating that recycling efforts are struggling to keep up with escalating e-waste production. Additionally, per capita e-waste generation in 2019 was highest in Europe, at 16.2 kilograms, followed by Oceania, the Americas, Africa, and Asia, with per capita figures of 5.6, 2.5, and 2.5 kilograms, respectively. It is noteworthy that Asia, despite its lower per-capita rate, contributed the most significant volume of e-waste, totaling approximately 24.9 million tons, surpassing the Americas and Europe, as shown in Table 1.

Table 1. Global E-waste Generation in 2019

Continent	E-waste generated (t)	Kg per capita	E-waste documented to be collected and properly recycled (t)	Percentage
Asia	2,490	5.6	290	11.7%
Americas	1,310	13.3	120	9.4%
Europe	1,200	16.2	510	42.5%
Africa	290	2.5	3	0.9%
Oceania	70	16.1	6	8.8%

Source: Ding and Lee (2022).

Furthermore, the dual nature of e-waste constitutes a central challenge in increasing the recycling rates. On one hand, e-waste contains numerous potentially hazardous materials that, if neglected or mishandled, can easily result in pollution and harm to both the environment and human health. Conversely, e-waste contains substantial quantities of valuable materials, including precious metals. These materials can generate significant economic value when sustainably used and recycled (Ding & Lee, 2022; Widmer et al., 2005). These attributes underscore the critical importance of effectively and safely recycling e-waste through the implementation of e-waste reverse logistics. Furthermore, reverse logistics for e-waste products is a significant component of relevant companies' ESG (Environmental, Social, and Governance) development. Kwon and Shin (2022) and Zhu

(2022)' s findings confirmed the positive impact of ESG on corporate value and stock prices. Consequently, the implementation of reverse logistics for e-waste products is of utmost importance for these companies. This imperative is also driven by the context and requirements of contemporary circular economies, carbon neutrality, and sustainable development initiatives. Despite the introduction of laws and policies aimed at enhancing the implementation of e-waste reverse logistics in many countries and regions, the current growth rate remains challenging.

E-waste reverse logistics primarily refers to the recycling of electronic waste products. Ding and Lee (2022) posit that e-waste reverse logistics encompasses the maintenance, after-sales support, collection, and transportation services provided by relevant companies for electronic products. As well as the process of returning or recycling

Fig. 1. Closed-loop Supply Chain of E-waste
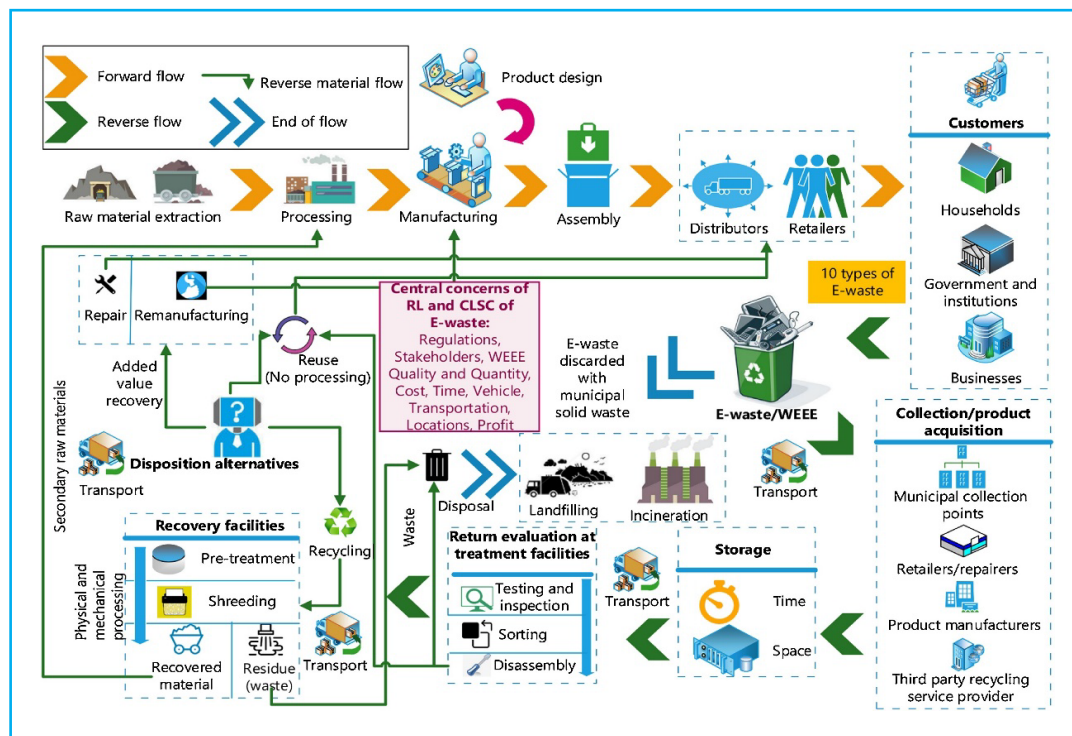
Source: Islam and Huda (2018).

products, packaging, and regaining value through proper handling of recycled e-waste. Furthermore, Islam and Huda (2018) pointed out that the integration of reverse logistics for e-waste products with forward logistics of electronic products forms a complete closed-loop supply chain of e-waste (Fig. 1). The development of this closed-loop supply chain is conducive to the sustainable development of society, promoting a balanced integration of economic performance, social inclusivity, and environmental resilience (Islam & Huda, 2018).

Jayaraman and Luo (2007) stressed that a company's recycling efforts and effective recycling systems can enhance customer satisfaction and bolster its green image and reputation. Ding and Lee (2022) confirmed through their research study that the effective implementation of reverse logistics for e-waste positively impacts corporate performance. Their study, which confirmed the effectiveness of reverse e-waste logistics, focused primarily on the business perspective and overlooked the crucial role of consumers. Many studies have focused on the development of improved recycling technologies (e.g., Jujun et al., 2014; Pant et al., 2012; Sanito et al., 2021) or from a governmental point of view on the relevant legal system (e.g., Lepawsky, 2012; Patil & Ramakrishna, 2020). The implementation

of reverse e-waste logistics relies on the involvement of enterprises and governments. However, consumers play a pivotal role in the use and recycling of electronic and electrical products, making their participation in e-waste reverse logistics indispensable. As emphasized by Ni et al. (2023), consumers' perceptions and behaviors regarding electronic waste determine the actual scale and economic dimensions of reverse logistics collection. Understanding the reasons why consumers do not return electronic waste and identifying strategies to increase their return rates have always been critical focal points in the implementation and practice of enhanced electronic waste management. Therefore, firms must understand consumers' willingness to participate in e-waste reverse logistics.

III. Research Model and Hypotheses

1. Research Model

Based on the Theory of Planned Behavior, this study aims to evaluate consumers' willingness to participate in e-waste products reverse logistics and their actual participation behaviors. We suggest that consumers' green attitudes, subjective

Fig. 2. Research Model
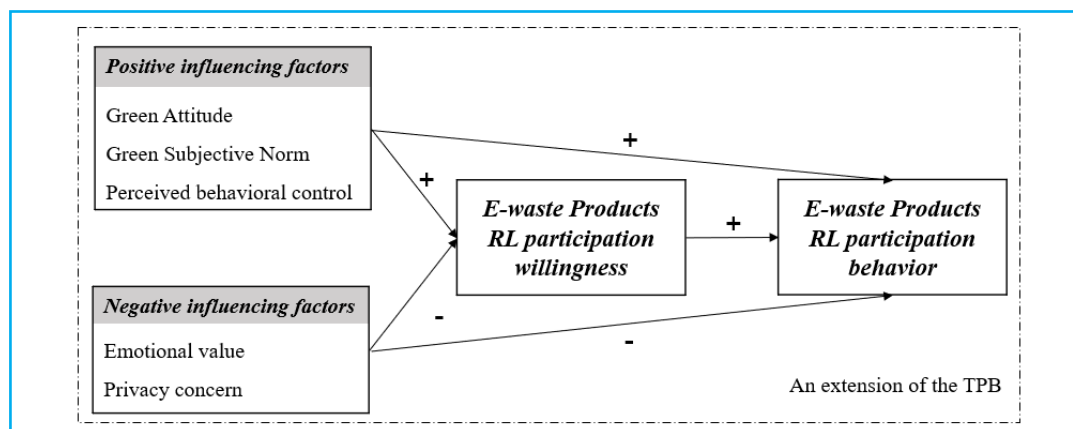
norms, and perceived behavioral control influence their intentions and actual behaviors. Among the subjective factors, emotional attachment to used electronics and concerns about privacy breaches are the two most significant factors determining consumer participation in WEEE reverse logistics. Thus, consumers' emotional values and privacy concerns act as negative influences, reducing their intentions and behavior related to participation. Fig. 2 illustrates the research model.

2. Hypothesis Development

Consumers' perceptions and behaviors regarding electronic waste determine the actual scale and economic dimensions of reverse logistics collection (Ni et al., 2023). In the TPB, attitude refers to a person's positive or negative perception of performing a target behavior (Kumar, 2019). Individuals' attitudes toward a behavior often influence their willingness to perform it. Consequently, numerous researchers have identified attitudes as predictors of behavioral intention (e.g., Ajzen, 1985). Concerning e-waste reverse logistics, consumers' perception of the green and circular economy, along with their positive attitude toward e-waste recycling, enhance their willingness to participate in reverse logistics. Subsequently, they are more likely to take concrete actions to participate. Zhang et al. (2019) proposed that a pro-environmental attitude promotes willingness to participate in e-waste recycling. Similarly, Koshta et al. (2022) confirmed that positive attitudes toward e-waste recycling have a favorable impact on the willingness to recycle e-waste through a survey involving 382 Indian residents. Thi Thu Nguyen et al. (2018) demonstrated that the intention to recycle e-waste is positively influenced by environmental awareness, societal pressure, laws and regulations, and the cost of recycling, but adversely influenced by the hassle of recycling. In addition, Jung and Liu (2022)'s research confirmed a significant association between consumers' positive perceptions of brand attitudes and the level of corporate social responsibility (CSR) attributes associated with the brand. Moreover, both factors exert a positive influence on consumers' purchase intentions. This underscores the importance consumers place on a company's CSR, indicating that they often exhibit a favorable disposition towards reverse logistics of discarded electronic products. These results imply that consumers are more willing to participate in e-waste products reverse logistics if they have a positive green attitude and perception.

Subjective norms are individuals' opinions of the standards that govern society and the environment (Suryanto et al., 2023). Ajzen (1991) suggested that people are more likely to take certain actions when they perceive encouragement and acceptance from their social environment. Planning and implementing a cost-effective, environmentally friendly, and socially beneficial e-waste products reverse logistics network not only facilitates commercial product recovery and legislative compliance but also aligns with the societal demands of a circular economy and sustainable development (Islam and Huda, 2018; Liu, T. et al., 2023; Ni et al., 2023). Advocating for and participating in such initiatives represent a positive norm that garners societal recognition and acclaim. This positive green social norm is likely to lead to a greater willingness to participate, as consumers tend to receive support from the community, friends, and family, as corroborated by Koshta et al. (2022). Similar findings were reported by Wang et al. (2019), who demonstrated that citizens' propensity to participate in online e-waste recycling was strongly and favorably influenced by subjective norms. Similarly, Kim (2021) confirmed the positive impact of consumers' perceived social value on their purchase intentions. Moreover, China adopted the Catalogue of Waste Electrical and Electronic Products for Disposal and Administrative Rules of Collection and Disposal of Waste Electrical Appliances and Electronic Products in 2011. This places additional demands not only on production suppliers but also offers insights into how consumers can effectively engage in the reverse logistics of discarded electronic products.

Through education and awareness campaigns by both the government and businesses, consumers may come to fully realize the legitimacy and significance of engaging in the reverse logistics of discarded electronic products, thereby cultivating subjective green norms and enhancing their willingness to participate.

The perception of how easy or difficult it is for end-users to perform a specific behavior is known as perceived behavioral control (Koshta et al., 2022). Perceived control behaviors include end-user experiences, perceived obstacles, and expectations of outcomes. The original TPB framework proposes that perceived behavioral control directly predicts both willingness and behavior (Ajzen, 1985). This implies that perceived control over behavior affects intention as significantly as it affects behavior. In the context of e-waste reverse logistics, consumer participation experience and perceived level of difficulty in participating are key variables. Gonul Kochan et al. (2016) emphasized that perceived convenience is a key factor leading individuals to engage more in the recycling of electronic waste. Zhang et al. (2019) also discovered that higher perceived behavioral control positively influenced the willingness to recycle e-waste. Similarly, Wang et al. (2019) confirmed that perceived behavioral control positively influences residents' intention to participate in online e-waste recycling. Gonul Kochan et al. (2016) noted that the increase in consumer participation in recycling may be attributed to several factors: proximity to disposal facilities, minimization of complexity in storing recyclable materials, and the establishment of various recycling collection programs, such as recycling events and curbside collection. In other words, these measures enhance consumers' perceived control behaviors and, as a result, can further promote consumer participation intentions. In addition, Koshta et al. (2022) confirmed that perceived behavioral control positively influences end-users' willingness to pay for e-waste recycling.

Based on the above arguments, we propose the following hypotheses:

H1: Consumer green attitudes have a positive impact on their participation willingness (a) and behavior (b) in the reverse logistics of e-waste products.

H2: Consumers' green subjective norms have a positive impact on their participation willingness (a) and behavior (b) in the reverse logistics of e-waste products.

H3: Consumers' perceived behavioral control has a positive impact on their participation willingness (a) and behavior (b) in the reverse logistics of e-waste products.

Simultaneously, many consumers attach 'emotional value' to discarded electronics, which results in their reluctance to dispose of electronic waste promptly or participate in recycling initiatives. Emotional value in the traditional sense mainly refers to the portion of value generated through the provision of a product that creates positive emotions, such as pleasure, in the customer so that the customer feels that he or she derives value from the product and that these emotional values tend to influence the consumer's purchasing decision for the product (Holbrook, 1986). Based on this, in this study, emotional value was further added to the consumer's attachment to the used product and acceptable recycling value. This attribute is commonly observed in electronics, such as cell phones and computers, that consumers use for extended periods. Through a survey of Pakistani consumers, Adeel et al. (2023) found that nostalgia for a product was one of the factors hindering e-waste disposal. The sense of familiarity and attachment brought about by a long period of use, as well as the psychological gap between spending much money on a purchase and not being able to recycle it at a low price, often leads many consumers to prefer to leave it at home rather than recycle it. The inclination to keep e-waste at home instead of returning it to the producer hinders the successful implementation of extended producer responsibility (EPR) models (Kumar, 2019) and reverse logistics approaches (Dixit & Badgaiyan, 2016).

Moreover, concerns exist regarding the

potential risk of personal privacy leakage when recycling waste electronic products, especially private electronic devices, such as discarded cell phones and computers. In today's world, electronic products store a significant amount of crucial personal information, and the consequences of mishandling and data leakage are difficult to predict. Confidential or sensitive information could end up in the wrong hands if the data stored in the device's memory are not adequately erased or deleted before the device is resold, donated, or recycled. Such information leakage can potentially result in identity theft and pose a direct threat to national security. A study analyzing 50 cell phones purchased from eBay used dealers found that more than half contained personal information or photos. Over 60% of phone numbers remain in call logs (Kiss, 2010). Bai et al. (2018) stressed that data security is the foremost factor influencing the collection of used cellphones. With the increasing number of reports of cell phone sales resulting in personal information leakage and subsequent fraud, residents have become more cautious when it comes to the disposal of their cell phones (Tan et al., 2018). Liu, T. et al. (2023) conducted a game analysis involving key stakeholders in the Internet-based recycling of obsolete electronic products. The finding shows that residents are more willing to participate in recycling when the rate of personal information leakage is lower. Based on these findings, policy recommendations and a theoretical framework are proposed to achieve a win-win situation, promoting the recycling of discarded electronic products via the internet while preventing information leaks. Consequently, privacy concerns often constrain consumers from participating in e-waste reverse logistics.

Hence, we propose the following hypotheses:

H4: Consumers' emotional value for waste electronics has a negative impact on their participation willingness (a) and behavior (b) in the reverse logistics of e-waste products.

H5: Consumers' privacy concern about waste electronics has a negative impact on their participation willingness (a) and behavior (b) in the reverse logistics of e-waste products.

In addition, many studies have verified the influence of willingness on actual behavior. In other words, when consumers have a higher willingness for a certain behavior, they may be more inclined to translate that willingness into actual actions. In a survey of 620 customers in India, Yadav and Pathak (2017) discovered that their willingness to purchase green products significantly impacted their actual purchasing behavior. In a study in Malaysia, Wee et al. (2014) confirmed that consumers' willingness to purchase organic food has a positive impact on the actual purchase behavior of the product. Zhao et al. (2022)' s study also substantiated the influence of consumer behavioral intentions on actual behaviors. This affirms that the stronger one's intention to engage in a specific behavior, the more likely one is to act on it (Ajzen, 1991). In other words, the enhanced willingness is more likely to be transformed into actual behavior. The implementation of e-waste reverse logistics is inseparable from consumer participation, and consumers' actual participation behavior largely relies on their willingness to participate. Therefore, we propose the following hypotheses:

H6: Consumers' willingness to participate in e-waste reverse logistics can have a positive impact on their actual participation behavior.

IV. Research Method and Data Analysis

1. Research Method

Through quantitative analysis, this study aims to validate consumers' willingness to participate in and their behavior towards reverse e-waste logistics. For this study, an English questionnaire was created by adapting and modifying several

preexisting valid questionnaires. Subsequently, it was translated into Chinese and calibrated by invited professionals. Participants rated the questionnaire items on a five-point Likert scale, where one corresponds to 'strongly disagree' and five to 'strongly agree'. To enhance the accuracy and reliability of the questionnaire while considering the value of each data point, 20 interviewees were randomly selected to participate in a pilot survey. During the testing phase, we identified some minor issues with the questionnaire and subsequently revised and improved it accordingly. Table 2 presents an overview of the measurements for each variable.

Table 2. Construct Measurements

Variables	Measurements	References
Green Attitude	The level of consumer awareness of green and circular economy and positive attitudes towards e-waste products recycling	Ajzen (1985), Zhang et al. (2019)
Green Subjective Norms	Individual perceptions of norms applicable to society or the surrounding environment, in this case measuring consumer perceptions of e-waste products recycling and the level of knowledge of the relevant norms	Suryanto et al. (2023), Koshta et al. (2022)
Perceived Behavioral Control	End-users' perceptions of the ease of performing specific behaviors, in this case, measuring the level of consumer perceptions and expectations of the ease of participating in the reverse logistics of e-waste products	Ajzen (1985), Koshta et al. (2022)
Emotional Value	The level of consumer attachment to used products and the added value from acceptable recycling values	Holbrook (1986), Adeel et al. (2023)
Privacy Concern	The level of consumers' concern about the possible risk of personal privacy leakage after recycling of e-waste products	Bai et al. (2018), Tan et al., (2018)
E-waste RL Participation Willingness	The degree of consumer participation in e-waste products recycling	Koshta et al. (2022), Mahmud et al. (2020)
E-waste RL Participation Behavior	Number and frequency of actual consumer participation in e-waste products recycling	Dixit and Badgaiyan, (2016)

Based on this, we conducted a survey of consumers in the 20–50 age group. Consumers in this age group exhibit a greater acceptance of environmental concerns, and they represent a segment of the population with both purchasing power and a relatively high ownership of electronic products. Considering regional variations and data balance, we surveyed consumers in five different regions of China: South China, East China, Central China, North China, and West China.

We selected a total of 1000 participants using a convenience sampling method. Questionnaires were distributed through both online and offline channels, with the online distribution primarily facilitated through the WXJ survey platform for data collection. In total, 381 questionnaires were collected between July 1st and August 1, 2023. Among these, 26 questionnaires were excluded because of missing values or invalid responses. Ultimately, data from 355 valid questionnaires

were analyzed. Table 3 shows the respondents' demographic characteristics. Descriptive statistics were calculated using SPSS, and structural equation model analysis was performed using SmartPLS.

Table 3. Demographics of Respondents (N=355)

Category	Items	Frequency	Percentage (%)
Gender	Male	184	51.8%
	Female	171	48.2%
Age	20-30	144	40.6%
	31-40	113	31.8%
	41-50	98	27.6%
Educational Background	High school (including vocational secondary school)	104	29.3%
	Bachelor's degree (including college)	181	51.0%
	Master's degree or above	70	19.7%
Careers	Student	66	18.6%
	Self-employed household	78	22.0%
	Employee	170	47.9%
	Worker or farmer	41	11.5%
Incomes (CNY)	Less than 2,000	49	13.8%
	2000-5000	98	27.6%
	5001-8000	105	29.6%
	More than 8000	103	29.0%

2. Data Analysis and Results

To ensure the validity and reliability of the survey and enable persuasive analysis and conclusions, we assessed the questionnaire's validity and reliability at a preliminary stage of conducting the survey. Cronbach's alpha values and the dependability of the construction composite were calculated. Construction reliability was demonstrated by all variable values exceeding 0.7 (Hair et al., 2014). The validity of the research instrument was assessed using convergent and discriminant validity. Convergent validity refers to the degree to which the variables measuring each latent variable are consistent, whereas discriminant validity refers to the degree to which the measured variables are unrelated to other latent variables. As indicated in Tables 4 and 5, the standardized estimates of the measured variables for each latent variable were equal to or greater than 0.5, ensuring convergent validity. Additionally, the root mean square value of the AVE exceeded 0.7, exceeding the correlation coefficient with the other latent variables, thus ensuring discriminant validity (Chin, 1998; Segars & Grover, 1993).

Table 4. Reliability and Validity Tests

Construct	Item	Loading	α	T-value	AVE	CR
Green Attitude	GA1	0.847		47.183		
	GA2	0.810	0.841	38.074	0.662	0.893
	GA3	0.799		38.933		
	GA4	0.834		48.009		
Green Subjective Norms	GSN1	0.792		30.626		
	GSN2	0.804	0.842	33.534	0.678	0.894
	GSN3	0.835		47.315		
	GSN4	0.860		54.145		
Perceived Behavioral Control	PBC1	0.839		37.173		
	PBC2	0.844	0.861	38.854	0.703	0.905
	PBC3	0.829		33.103		
	PBC4	0.845		40.071		
Emotional Value	EV1	0.818		30.999		
	EV2	0.869	0.864	48.837	0.708	0.907
	EV3	0.854		45.135		
	EV4	0.828		34.154		
Privacy Concern	PC1	0.839		45.177		
	PC2	0.835	0.794	44.543	0.708	0.879
	PC3	0.849		44.100		
E-waste Products RL Participation Willingness	EPW1	0.830		47.248		
	EPW2	0.834		51.347		
	EPW3	0.820	0.883	39.914	0.681	0.914
	EPW4	0.794		41.679		
	EPW5	0.847		47.427		
E-waste Products RL Participation Behavior	EPB1	0.848		49.690		
	EPB2	0.860	0.809	54.822	0.723	0.887
	EPB3	0.843		45.022		

Table 5. Discriminant Validity

	EPB	EPW	EV	GA	PBC	PC	SN
EPB	0.850						
EPW	0.471	0.825					
EV	0.248	0.198	0.843				
GA	0.333	0.537	0.255	0.823			
PBC	0.249	0.202	0.392	0.206	0.839		
PC	-0.340	-0.518	-0.261	-0.318	-0.254	0.841	
SN	0.326	0.544	0.221	0.397	0.219	-0.308	0.823

The results of the path analysis are presented in Table 6. Hypothesis 1a and 1b predict that consumers' green attitudes positively impact their willingness and behavior to participate in e-waste products reverse logistics As shown in Table 6, consumers' green attitudes have a significant positive effect (p < 0.01, t-statistic = 7.710 and 2.974), supporting both Hypotheses 1a and 1b. Regarding Hypotheses 2a and 2b, the results also confirm the significant impact of consumers' green subjective norms on their willingness and behavior to participate (p < 0.01, T = 8.692 and 3.059), thereby supporting both Hypotheses 2a and 2b. Hypotheses 3a and 3b propose that consumers' perceived behavioral control positively influences their intention and behavior to participate in e-waste products' reverse logistics. The test results for Hypothesis 3a indicated T = 0.149 with p > 0.05, leading to the rejection of Hypothesis 3a. The results for Hypothesis 3b, on the other hand, showed p < 0.05 and T = 1.972, thereby supporting

Hypothesis 3b.

On the other hand, Hypotheses 4a and 4b propose that consumers' emotional value associated with discarded electronic products will have a negative impact on their willingness and behavior to participate in e-waste products' reverse logistics. The results indicate that the p-values for both are greater than 0.05, with T-values of 0.95 and 1.523, respectively. Therefore, both Hypotheses 4a and 4b are rejected. Meanwhile, Hypotheses 4a and 4b predict a negative impact of consumers' concerns about privacy breaches. As shown in Table 6, both path coefficients are negative, with p-values less than 0.01, and T-values of 8.536 and 3.681, respectively. Therefore, both Hypotheses 4a and 4b are supported. Finally, the results confirm the significant influence of consumers' willingness to participate in e-waste products reverse logistics on their actual participation behavior (p<0.01, T=12.167). Thus, hypothesis 6 was supported.

Table 6. Path Analysis and Hypothesis Testing Results

Hypotheses	Path	Path Coefficients	T statistics	P values	Results
H1a	GA → EPW	0.312	7.710	0.000	Supported
H1b	GA → EPB	0.167	2.974	0.001	Supported
H2a	GSN → EPW	0.328	8.692	0.000	Supported
H2b	GSN → EPB	0.162	3.059	0.001	Supported
H3a	PBC → EPW	-0.002	0.043	0.483	Rejected
H3b	PBC → EPB	0.100	1.972	0.024	Supported
H4a	EV → EPW	-0.039	0.95	0.171	Rejected
H4b	EV → EPB	0.081	1.523	0.064	Rejected
H5a	PC → EPW	-0.329	8.536	0.000	Supported
H5b	PC → EPB	-0.19	3.681	0.000	Supported
H6	EPW → EPB	0.323	4.893	0.000	Supported

V. Discussion

This study examines the subjective factors influencing consumer willingness and behavior to participate in reverse logistics concerning e-waste products. To accomplish this objective, we constructed a structural model employing the theoretical framework of TPB. Furthermore, this study addresses a gap in the existing literature, which primarily focuses on studying positive influencing factors, by including variables related to negative influencing factors for a more comprehensive study. Our study posits that consumer intentions and behaviors to participate in e-waste products reverse logistics are influenced by their green attitudes, green subjective norms, and perceived behavioral control. In contrast, consumers' emotional values and privacy concerns may impede their intention and behaviors to participate. Additionally, we contend that the intention to participate has a positive impact on actual participation behavior. The results reveal that nine of the eleven hypotheses proposed were supported, whereas the remaining three were not.

First, the results confirmed that consumers' green attitudes and subjective norms positively influenced their willingness and behavior to participate in e-waste products reverse logistics. This is consistent with studies by Koshta et al. (2022), Zhang et al. (2019), and others. The overall attitude of respondents towards e-waste product recycling was favorable, and they believed that it was beneficial to participate in e-waste product recycling. Furthermore, their behavior is shaped by their social environment and how their actions are perceived within their social circles. Consumer awareness of e-waste product recycling is steadily growing in China, driven by enhanced education and increased publicity. Based on this, consumer awareness of e-waste recycling should be fostered through a variety of channels, and sustained publicity should be conducted to enhance their environmental awareness and incentives. Moreover, Patchimnan et al. (2022)' s research validated that consumer experiences can be transformed into attitudes, and positive attitudes,

in turn, lead to future purchasing behavior. Based on this premise, we can infer that the experiences and satisfaction gained by consumers when engaging in reverse logistics are likely to further enhance their intention and behavior to participate again. In this regard, Dixit and Vaish (2015) also suggested that, given consumers' preference for establishing connections and spending time through social media, leveraging social media, and creating social groups can be considered as one of the effective means to attract consumers. Simultaneously, they emphasized that in developing countries, governments and society play a pivotal role in shaping individual behaviors. Therefore, governments should advocate for green practices and assist commercial entities in enhancing consumers' awareness of the benefits of proper recycling. Hypothesis 3a, which predicted that consumers' perceived control behaviors would positively affect participation intentions, was not confirmed in this study. This finding is consistent with those reported by Mahmud et al. (2020) and Koshta et al. (2022). However, this does not imply that the factor was unimportant. A possible explanation is that the respondents do not have a good understanding of the relevant recycling systems and processes and thus may perceive participating in WEEE reverse logistics as a complex and time-consuming task. Interestingly, the results confirm the positive impact of perceived control behavior on actual consumer participatory behavior. This is akin to the findings of Koshta et al. (2022)' s research, where he found that consumers' perceived control behavior positively influences their willingness to pay for the recycling of electronic waste. This suggests that contemporary consumers possess sufficient awareness regarding the recycling of electronic waste to overcome the inconvenience associated with it. This further suggests that the government and relevant companies should make efforts to raise consumer awareness, simplify the process, and improve the convenience and simplicity of participation.

On the other hand, hypotheses 4a, 4b, 5a, and 5b predict that consumers' emotional value

and privacy concerns act as deterrents to their participation intentions and behaviors. The results confirmed Hypothesis 5a and 5b but rejected Hypothesis 4a and 4b. The main reason for this is that respondents were mainly 20–50-year-old consumers. Consumers in this age group tend to have a weaker attachment to e-waste products than older age groups. They also possess purchasing power and exhibit higher levels of acceptance and preference for new products and e-waste recycling. Nonetheless, concerns about the risk of privacy leakage may partially hinder their intention and actual behavior to participate. This is consistent with Liu, T. et al. (2023)'s research. They further emphasized the importance of government regulation and incentives in the recycling process. Hence, the relevant enterprises should implement comprehensive consumer privacy protection measures to enhance consumer intention and participation. Finally, the study confirmed the impact of participation intention on actual participation behavior, in line with Yadav and Pathak (2017). Koshta et al. (2022) similarly validated that consumers' recycling intentions positively affect their payment behavior.

VI. Conclusion

In alignment with the social demand for carbon-neutral and sustainable development in the new era, the reverse logistics of e-waste products emerges as a topic worthy of an in-depth study. Existing studies have verified the significance of recycling electronic products for society and relevant enterprises, owing to dual nature of electronic waste, characterized by its hazardous aspects and economic value. While the government and enterprises play essential roles in WEEE reverse logistics, consumers, being the primary drivers of electrical and electronic product consumption and utilization, are indispensable for the successful implementation of WEEE reverse logistics. Moreover, understanding the behaviors and intentions of consumers regarding e-waste products is beneficial for companies in designing

effective reverse logistics management. This not only enhances the company's standing from environmental and regulatory perspectives but also offers economic benefits and a competitive advantage (Guide et al., 2003). Therefore, it is particularly important to study consumers' intentions to participate and their actual behavior. On this basis, this study confirms the positive effects of green attitudes and green subjective norms on the participation intentions and behaviors related to e-waste products' reverse logistics. Additionally, it underscores the negative effects of privacy concerns on participation intentions, as elucidated through a survey study of 355 consumers in China.

The theoretical contributions of this study can be summarized as follows: First, this study integrates consumer psychology with the crucial topic of reverse logistics for e-waste products, offering a deeper analysis of factors influencing consumer participation intentions and behaviors from the consumer's perspective. This responds to Doan et al. (2019)'s call for further strengthening research on consumer behavior in the recycling and utilization of discarded electronic products. Second, it is an extension and validation of the TPB. Based on this theory, we have developed and validated a model of the factors influencing consumers' intentions and behaviors to participate in reverse logistics for WEEE, including their green attitudes, green subjective norms, and privacy concerns. It was validated through a survey of 355 Chinese consumers. Third, distinguishing from other studies, this research augments existing literature by introducing an investigation into negative subjective factors among consumers. This complements and completes existing research. In summary, our work offers valuable insights for scholars and practitioners in this field.

In terms of practical contributions, the findings of this study offer valuable insights for relevant enterprises. First, it is established that consumers' willingness and behavior to participate in e-waste reverse logistics primarily depends on their green attitudes and subjective norms. Consequently, we recommend fostering consumers' understanding

of e-waste recycling through various means and conducting ongoing public awareness campaigns to promote environmental consciousness and incentivize participation. Given consumers' preference for social connectivity and online engagement, leveraging social media, and creating social groups can be considered effective strategies to attract consumers. Additionally, in developing countries, governments and society play a pivotal role in shaping individual behaviors. Therefore, governments should advocate for environmentally friendly practices and assist commercial entities in raising consumers' awareness of the benefits of proper recycling. Second, the study underscores that consumer concerns about privacy breaches hinder their participation in e-waste reverse logistics. This underscores the need for relevant enterprises to implement robust consumer privacy protection measures to boost consumer intention and participation. Simultaneously, the regulatory role of the government is crucial in advancing electronic waste recycling. Considering the substantial presence of personal information in discarded electronic products, the government should rigorously oversee relevant manufacturing and recycling companies to ensure their

compliance with information security obligations. Moreover, the government can introduce policy incentives to encourage businesses to increase their investments in information security, thereby enhancing residents' confidence in participating in online recycling. Last, the results confirm that consumers' willingness to participate positively influences their actual participation behaviors. This underscores the importance of increasing consumers' intention and motivation to participate, necessitating governments and businesses to consider consumers' perspectives and implement flexible measures.

Nevertheless, this study has some limitations. First, despite our best efforts, there remains a risk of bias that should be acknowledged when evaluating the accuracy of our survey data. Second, there are various types of WEEE, and different products may possess different characteristics. Therefore, further categorization studies are open to debate. Third, this study investigated the subjective influences on consumer behavior. However, future research endeavors should also delve into the external factors exerting influence in this domain.

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Mixture of Large and Small Firms in General Equilibrium

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ABSTRACT

Purpose – This paper develops a tractable model of general equilibrium featuring a (1) mixture of large and small firms in a sector, (2) managerial activities of large firms, and (3) leadership of large firms over small firms in product and labor markets. This paper aims to incorporate strategic firm behavior into a general equilibrium.

Design/Methodology/Approach – This paper launches a game-theoretic approach for a mixture of large and small firms within an industry. Within the framework, small firms form a coalition to stand against large firms. Thus, it models that large firms and the coalition of small firms interact strategically. Unlike small firms, large firms hire managers to supervise production workers and improve production efficiency.

Findings – With manager skills, the leadership of large firms is enhanced. That is, the market share of large firms expands, while that of small firms shrinks. With the shrinkage, firm selection occurs within the coalition of small firms. Thus, small firms of low-ability entrepreneurs exit the sector, and the resources are reallocated toward higher skills and higher-ability entrepreneurs. Large firms affect the pattern of labor demand by creating higher-paying jobs for skills.

Research Implications – As large firms have stronger market leadership, aggregate income increases and wage inequality widens. This paper can contribute to the literature of oligopolistic competition and general equilibrium.

Keywords: firm heterogeneity, firm-size distribution, general equilibrium, management, market mixture
JEL Classifications: C72, D50, D82, L13, M50

I. Introduction

Oligopolistic competition prevails in industries. There is empirical evidence for the presence of large firms in industry. Hottman, Redding, and Weinstein (2016) found that the largest firm takes 22% (on average) of total revenue in one industry. The empirical study supports that industry is mixed of large and small firms. Neary (2002, 2010, 2016) addressed that the presence of large firms be taken into consideration for general equilibrium. For simplicity, he assumed large firms to be 'large'

within an industry, but 'small' at the economy level. Within his framework, large firms can influence not aggregate income, but aggregate price. Then, strategic firm behavior can be embedded into general equilibrium. He developed the term of 'general oligopolistic equilibrium (GOLE)'. The present study can contribute to general equilibrium analysis in the presence of large firms. This study contacts the growing literature of industry mixture. Shimomura and Thessie (2012) developed a general-equilibrium model when an industry is mixed of large and small firms. Within their framework, the large firm differs from the small firm in the fixed cost of production. The main result was that the entry of a large firm generates a pro-competition effect. That is, it lowers price level and improves social welfare. They treat large firms as income takers, and small firms are infinitesimal. Thus, large firms have leadership over small firms in the product market. Parenti (2018) incorporated multi-product firm and quadratic utility into the Shimomura-Thessie model, and showed that the entry of a large firm would generate an anti-competition effect. The reason is that market power allows large firms to strategically charge higher price markups once small firms are squeezed out.[1] As a result, aggregate price rises, and social welfare falls. With a similar framework, Pan and Hanazono (2018) found that whether the effect is pro-competition or anti-competition would depend on demand substitutability between large and small firms. They found two effects: the substitution (negative) effect and feedback (positive) effect. If substitutability between large and small firms is sufficiently high, the feedback effect dominates the substitution effect. Therefore, the entry of a large firm would crowd out the output of small firms. Focusing output quantity, those studies were silent about firm heterogeneity in productivity. The present study highlights that a large firm differs from a small firm in management style as well as

production scale. That is, large firms are more hierarchical and hire managers of high talent because their production scale is large. However, small firms do not need to hire managers. In this paper, firm productivity stems mainly from managerial quality. Thus, firms of higher-talent managers lead to higher productivity, and hence produce larger outputs given the inputs. The higher productivity of large firms strengthens their market leadership over small firms. Within this framework, large firms are first-movers, while small firms are second-movers. A large firm can affect the market, whereas a small firm cannot. Only when small firms act collectively can they stand against large firms. Thus, they form a coalition and affect the market price. In the first stage, large firms schedule their outputs simultaneously. In the second stage, the coalition of small firms schedules the aggregate output. Small firms share the output. In this study, managers play a pivotal role in sharpening the production efficiency of large firms. The study shows how managerial activities affect within-economy resource allocation in a general equilibrium. In the seminal paper, Lucas (1978) emphasized the role of managers in firm size distribution. In his work, 'manager' is interchangeable with 'owner' or 'entrepreneur'. That is, a firm has two managerial layers: entrepreneur at the top, and workers at the bottom. Lee (2021) extended this work. A firm has three managerial layers: entrepreneur at the top, managers in the middle, and workers at the bottom. Within this present framework, large firms have three layers, while small firms have two layers. Sunk cost occurs in not only production but also firm organization. Prior to production, all firms should establish production facilities. Moreover, unlike small firms, large firms seek managers to fill the second managerial layer. Managers differ in talent. In equilibrium, there is positive matching between entrepreneurs and managers. That is,

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1. We do not consider multiple products because the breadth of product range has no impact on the main implication. Shimomura and Thessie (2012) also provided the same reason for considering a single product only.

higher-talent managers work with higher-ability entrepreneurs.[2] This means that higher-ability entrepreneurs can find talent at smaller costs through wider social networks.[3] The positive matching dramatizes productivity differences across large firms. When managers work with an entrepreneur of higher ability, the contribution to firm productivity is even greater because it creates a greater synergy. To model the search for managers, this paper benchmarks the work of Helpman, Itskhoki, and Redding (2010), which explained how worker selection affects firm productivity. In the present paper, the searching cost attributes two determinants: (1) intrinsic firm character (entrepreneur ability) and the (2) distributional property of talents. The search cost is sunk prior to production. Despite the search cost, managers sharpen production efficiency and help large firms gain competency. As mentioned, competency is greater when the entrepreneur is more able. Thus, resources are reallocated from firms of lower-ability entrepreneurs to firms with higher-ability entrepreneurs within the industry. The engagement of managers in large firms sacrifices small firms, which are run by lower-ability entrepreneurs. Small firms exit the industry and lose the most. The novelty of the present study is to point out that the managerial activities of large firms affect the pattern of labor demand by creating higher-paying jobs. In the absence of managerial activities, the pattern of labor demand is simple. Large firms hire workers first, and small firms hire workers next. Large firms pay workers a greater wage than small firms. The remainders work in Industry 1 at the lowest wage. In the presence of managers, the wage inequality is even wider. That is, large firms of high-ability entrepreneurs compensate managers more than those of low-ability entrepreneurs. The talent recruits of large firms inflict quantity and quality effects on small firms. The quantity effect is that talented managers help large firms to upgrade production efficiency and produce larger outputs. The output expansion crowds out the aggregate output of small firms. The quality effect is that large firms absorb better workers from small firms. Preceding papers concentrate on the quantity effect, while the current paper presents the quality effect. Regarding managerial activities and firm organization, this paper can link to some selected articles. Aron (1988) analyzed the agency relationship between managers and the owner. In his paper, the size and structure of firms are determined with not only production technology but also with characteristics of managers and incentives. The problem of moral hazard arises. Bandiera et al. (2007) developed a model such that managerial incentive can affect worker productivity through targeting and selection. Managers are incentivized to hire more able workers and weed out sloppy workers. They provided empirical evidence. The two papers insinuate that the incentive system and moral hazard can affect firm productivity.[4] In the present paper, the problem of moral hazard is not an issue. Instead, the problem of adverse selection is compelling. To prevent the problem, large firms pay the search cost. Chen (2017) incorporated firm hierarchy into a model of industrial equilibrium. In his study, managerial technology affected

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2. Using Norwegian firm data, Irarrazabal at al. (2013) empirically showed that 40 to 25 percent of the improvement was attributed to high-quality labor that exporters employ. Their empirical finding supports that firm productivity is endogenous. In addition, Lee (2019) analyzed the effect of factor market imperfections on the trade pattern by incorporating factor heterogeneity into Melitz's model.

3. Castillo and Clavano (2021) and Medina at al. (2022) provided new insight that entrepreneurial ability can be differently defined for underdeveloped countries, concentrating on agricultural business. Bonalos at al. (2022) executed a case study for software start-ups in the Philippines. Cho and Kwon (2022) discussed how an entrepreneur can choose a capital structure for the success of business.

4. Managerial incentive can generate diverse effects for a firm. Li at al. (2022) investigated the relationship between CEO incentives and employee wages. Lee (2022) launched a new approach to the problem of managerial incentive from the perspective of humanity. Yin and Kwon (2022) provided a literature survey for corporate entrepreneurship, intrapreneurship, and corporate venturing.

within-industry resource allocation, while the number of managerial layers was endogenous. His study examined the selection effect of a common improvement in management technology. With the selection effect, the resources were reallocated from less hierarchical firms to more hierarchical firms. In the present study, large firms have the same hierarchical structure of three layers, and the number of layers does not matter. The resources are reallocated from firms of lower-ability entre-preneurs to firms of higher-ability entrepreneurs. Bloom, Sadun, and Van Reenen (2017) provided the model of 'Management as a Technology' (MAT). Within their framework, firms initially draw a heterogeneous managerial ability at start-up. They can sharpen firm productivity through investment in managerial capital. The model predicts that stronger product market competition leads to higher management quality. Public capital can play a role. Lee (2022a) analyzed how public capital can affect market equilibrium when home and foreign firms compete in an oligopoly in a third country. Lee (2022b) pointed out that the problem of moral hazard can arise when the government invests public capital in firms in the private sector. The present paper does not discuss public capital. Thus, the talents of hired managers are the main source of firm productivity. The remainder of the paper is structured as follows. Section II will present the baseline of the model. It will analyze how the interplay between large firms and small firms yields equilibrium. Section III will analyze homogeneous firms, while Section IV will analyze heterogeneous firms. Section V will provide concluding remarks.

II. Model

Consider an economy with L consumers that supply one unit of labor. There are two sectors. Sector 1 produces a homogenous good (Good 1) under perfect competition. As numeraire, the good is produced with constant returns to scale. Sector 2 also produces a homogeneous good under oligopoly. In the assumption, Sector 2 consists of N large firms and a continuum of small firms.[5] A large firm can affect the market price, while a small firm cannot. However, small firms form a coalition to stand against large firms. Then, small firms can affect the market price through the coalition. Within this framework, large firms and the coalition of small firms compete in quantity. Large firms have leadership over the coalition of small firms. As introduced, the organization differs between large firms and small firms. Large firms are organized into three layers: an entrepreneur, managers, and workers. Small firms are organized into two layers: an entrepreneur and workers. Unlike small firms, large firms need managers to supervise workers.

1. Consumption and Demand

Suppose there are two sectors: Sector 1 and Sector 2. As introduced, Sector 2 is under oligopoly. There are two types of supplier: large firms and small firms. A countable number of large firms have market leadership over small firms. The sector is a mix of large and small firms. There is a continuum of infinitesimal small firms. Under the leadership of large firms, small firms form a coalition to stand against the leadership of large firms. Also, consumers are a mix of risk-averse and risk-neutral consumers. All consumers exhibit linear demand such that $P=a-bQ$, where b is a parameter. Some risk-neutral consumers exhibit $E(P)=a-bQ$. The coalition of small firms set the aggregate price to equal to the market equilibrium price. The aggregate price is the average price of small-firm products, $E(P)$. The

risk-neutral consumers are indifferent between large firms and small firms if $E(P)=P^*$, where P^* is the price of large-firms. In the assumption, there exists a sufficient number of risk-neutral consumers. Then, the coalition of small firms strategically decides the aggregate output for small firms, and the aggregate output is shared among small firms. In assumption, the risk-neutral consumers exhibit a CES preference toward small-firm products. Large firms supply homogeneous quality, while small firms supply heterogeneous qualities. Thus, risk-averse consumers prefer large firms. However, quantity is limited. Therefore, some risk-neutral consumers do not mind the heterogeneous qualities of small firms. In this paper, the qualities are subjective. That is, the qualities are not perfectly substitutable. In this case, the aggregate output is not shared equally among small firms. Small firms compete monopolistically within the coalition. L denotes variables associated with large firms, while subscript S denotes small firms. Large firms have market leadership over small firms. Large firms are first-movers, and the coalition of small firms is the follower. Thus, there are $(N + 1)$ players, N large firms and the coalition of small players. In Stage 1, large firms determine the output schedule. In Stage 2, the coalition of small firms determines the aggregate output. Large firms take into account how the coalition of small firms will respond in the second stage. Let Q_i denote the output of large firm i. Q_s denotes the aggregate output of small firms. Thus, $Q_s = \int_{\omega \in \Omega}^{M} q(v)\, dv$, where v denotes quality. Sector 1 produces a homogenous quality. Within Sector 2, large firms produce a homogeneous quality, while small firms produce heterogeneous qualities. In the case of firm homogeneity, the aggregate output of small firms is equally shared among small firms. The mixture of consumers does not matter.

2. Labor Quality Distribution

This study considers labor only as a production factor. The labor supply is fixed at $\bar{L}$. Pointedly,

quality differs across individuals. One objective of this paper is to show that quality distribution can be more important than quantity. Quality is two-dimensional. An individual has ability and skill. In this paper, ability is the source of entrepreneurship, while skill is the source of the employee. Ability and skill are not observable publicly. Only the individual knows his/her own ability and skill. Individuals self-select for entrepreneurship according to ability. An entrepreneur can run a small firm. The entrepreneurs of large firms inherit ownership. They still differ in ability. Those that do not self-select for entrepreneurship are called agents. Agents enter the labor market with heterogeneous and unobservable skill; the labor market is incomplete. Each agent is indexedby ω that describes a single dimension of variation: skill. Large and small firms differ in organization. Only large firms hire managers to supervise production workers because the production scale is large. Thus, an agent of the higher index ω contributes more to production efficiency when hired as a manager. Distribution of skills is given by a cumulative distribution function $G(\omega)$, with density $g(\omega)$, that has support in $[1, \infty]$. It is assumed that skills follow the Pareto distribution.

$$G(\omega) = 1 - \omega^{-k} \text{ for } 1 < \omega < \infty \text{ and } k > 1.$$

(1)

The parameter k indexes the dispersion of skills. When $k = 1$, the distribution is uniform. As k is lower, the distribution is skewed toward high skill.

3. Production and Supply

Sector 1 produces the numeraire good with constant returns to scale under perfect competition. Thus, the price equals wage w_1, given as 1. Thus, P_1 equals 1. Sector 2 is a mix of large and small firms. To stand against large firms, small firms form a coalition. The coalition moves

after large firms move. That is, the coalition of small firms set aggregate output strategically. Unlike Sector 1, Sector 2 requires a fixed cost of production and exhibits increasing returns to scale. Within Sector 2, large and small firms differ in some aspects. First, the production scale differs. Large firms have a larger scale of production than small firms. Thus, the fixed cost of production should be larger for these firms. Second, firm organization differs. The organization of large firms is more hierarchical and has three layers: an entrepreneur, managers, and workers.[6] The organization of small firms is less hierarchical and has two layers: an entrepreneur and workers. Thus, small firms do not need managers. In the work of Lucas (1978), an individual self-selects for entrepreneurship by ability only if the earned profit from running a firm exceeds the wage. In his paper, the entrepreneur ability determined managerial quality. In this paper, an individual self-selects for entrepreneurship only if he can earn a positive profit. Within Sector 2, an entrepreneur runs a firm and is endowed with a level of ability.[7] Production technology is identical within sector. Small firms do not have managers such that firm productivity relies entirely on entrepreneur ability. The implication is that the entrepreneur makes all decisions for the firm. Large firms have managers, so firm productivity is endogenously determined with entrepreneur ability and average manager skill. Firms are heterogeneous in productivity. Thus, the output differs across firms given the inputs. The output function can be defined as

Where φ is firm productivity and $f(l)$ is linear production technology.

For large firms, productivity is endogenously determined in combining entrepreneur ability ψ and average manager skill $\overline{\omega}$. Hiring managers incurs a sunk cost. Higher-ability entrepreneurs can hire managers of higher skill at a lower sunk cost. Given the linearity of production technology, output implies worker inputs. For small firms, entrepreneurs can observe ability after paying the fixed cost f_s for production. In the assumption, an entrepreneur runs a firm, and the fixed cost can be measured in units of workers in Sector 1. In this paper, the term 'entrepreneur' is interchangeable with 'owner'. Since small firms compete monopolistically within the coalition, each small firm is associated with a demand. After observing demand and ability, the entrepreneur decides whether to enter Sector 2. The production of each variety involves the fixed cost f_s and a constant marginal cost, being inversely related to entrepreneur ability ψ. The output function is $q(\psi, l) = \psi l$, where l is worker inputs. A higher index indicates higher ability. Regardless of productivity, a small firm faces a residual demand curve with constant elasticity σ, and the price markup equals $\frac{\sigma}{\sigma-1} = \frac{1}{\rho}$. For large firms, production requires the larger fixed cost f_L because the scale is larger. Fixed cost f_L is same for all large firms. For these, productivity is endogenous because entrepreneurs and managers make decisions together. Extending the work of Rosen (1982)[8], Lee (2021) defined the output function as follows.

$$q = \varphi f(l), \qquad\qquad (2)$$

$$q(\psi, l) = \psi g(\overline{\omega}) f(l), \qquad\qquad (3)$$

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6. Lee (2019) explained why not all firms adopt organizational change. After organizational change, firms have internal organization in a hierarchy: an entrepreneur, managers, and workers. However, there was no explanation for how large firms behave differently from small firms.

7. Manasse and Turrini (2001) considered a model wherein entrepreneurs differ in ability. Each entrepreneur produced a single variety of a differentiated good using identical labor input, and the quality of the variety increased in entrepreneurial ability. In their model, the differences between exporters and non-exporters attributed to differences in entrepreneurial skill. Unlike their model, differences in entrepreneurial skill lead to differences in management quality in our model.

where $\bar{\omega}$ is average manager talent. Eq. (3) implies that production efficiency is positively associated with average manager skill.[9] In the spirit of Lucas (1978), entrepreneur ability is multiplied to $g(\bar{\omega})$. The function implies a synergy. Quality is not reducible to the 'atoms' of managers employed in the firm. The synergy creates more than the simple sum of the parts. The term $\psi g(\bar{\omega})$ informs as to how the entrepreneur transforms average manager skill into firm productivity at a decreasing return. The decreasing return can refer to papers by Helpman et al. (2010) and Bloom et al. (2012). In Helpman et al. (2010), firm productivity exhibited a decreasing return to average worker ability.[10] In this paper, firm productivity has no relation with workers. Bloom et al. (2012) emphasized social trust in decentralization. In their framework, entrepreneurs hire managers that can behave 'wrongly' for their own interests with probability τ. The entrepreneur can obtain the share $(1 - \tau)$. In a country of high (low) social trust, τ is low (high). Within this framework, average manager skill is reflected in firm productivity more as the level of social trust is higher. That is, $g(\bar{\omega}) = (\bar{\omega})^{\tau}$, where $0 < \tau < 1$ is a parameter of social trust. Thus, the endogenous productivity is $\varphi(\psi, \bar{\omega}) = \psi(\bar{\omega})^{\gamma}$. That is, the output of a large firm becomes

$$q(\psi, \omega, l) = \varphi(\psi, \bar{\omega}) f(m, l) = \psi(\bar{\omega})^{\gamma} min\left\{\frac{m}{\alpha}, l\right\},$$
(4)

Where α is a given control span.

III. Homogeneous Firms

This section supposes firm homogeneity. That is, large firms are symmetric within the group while small firms are symmetric within the group . There is no organizational difference between large and small firms. Thus, large firms equally have the marginal cost c_L while small firms equally have c_s. As introduced, large firms are first-movers, and small firms are followers. Agents work in either Sector 1 or Sector 2. Wage differs between sectors, and between large and small firms within Sector 2. Large firms pay the workers wage w_L, while small firms pay wage w_s. With linear production technology, $c_L = w_L$, and $c_s = w_s$.

1. Production

Within Sector 2, there are N symmetric large firms, and the coalition of small firms. Let Q denote industry output. For a large firm, the profit function is

$$\pi_i = (a - bQ)q_i - w_L q_i - f_L,$$
(5)

Where f_L is the fixed cost.
For the coalition of small firms, the profit function is

$$\pi_s = (a - bQ)q_s - w_s q_s - f_s,$$
(6)

Where f_s is the fixed cost.

8. In his paper, each entrepreneur has limited time to supervise all workers, so he purchases supervisory time from managers with diminishing returns. Suppose that each entrepreneur controls some number of managers, while each manager controls a certain number of workers. Let ω denote managerial talent, which varies from manager to manager, and $g(\omega)$ denote the efficiency unit that manager ω generates. In the assumption, managerial talent is exogenously distributed. Then, the product attributable to the manager ω controlling l is $x_{\omega}=g(\omega)\mu(\omega)f(1)$, where $\mu(\omega)$ is the probability of ω.
9. There is empirical evidence. Analyzing German manufacturing firms, Bender at al. (2018) found that about one sixth of the association between productivity and managerial practice was attributed to average manager ability. They found that average manager ability has an independent association with total factor productivity after holding constant the average quality of the workforce. Their finding empirically supports the positive effect of managers on total factor productivity.
10. In Helpman at al. (2010), firm productivity was a function of average worker ability. In the present paper, managers generate productivity, and workers follow manuals.

Large and small firms sequentially interact to decide output schedules. Timing is outlined as follows. In Stage 1, large firms schedule output. In Stage 2, the coalition of small firms schedules the aggregate output. The sequential interaction implies a Stackelberg equilibrium. With backward induction, each large firm can find the optimal quantity. With symmetry, the industry output is $Q = Nq_L + q_s$. Let m denote the mass of small firms. Then, the profit function of the coalition is found as

$$\pi_s = \left(aq_s - b(Nq_sq_L + q_s^2)\right) - w_sq_s - mf_s. \quad (7)$$

The first order condition is found with

$$\frac{d\pi_s}{dq_s} = a - bNq_L - 2bq_s - w_s = 0. \quad (8)$$

For the collective choice of small firms, the best response function can be found as

$$q_s = \frac{a - bNq_L - w_s}{2b}. \quad (9)$$

As leaders, large firms recognize how small firms will respond in the second stage. That is, each large firm plugs q_s into its profit function. Then, it yields

$$\pi_s = \left(aq_s - b(Nq_sq_L + q_s^2)\right) \\ -w_sq_s - mf_s. \quad (10)$$

The first order condition is

$$\frac{d\pi_L}{dq_L} = a - bNq_L - \left(\frac{a - w_s}{2}\right) - w_L = 0. \quad (11)$$

Then, its optimal quantity is

$$q_L^* = \frac{(a - 2w_L + w_s)}{2bN}. \quad (12)$$

Total output of large firms is

$$Nq_L^* = \frac{(a - 2w_L + w_s)}{2b}$$

Then, the optimal quantity for the coalition is

$$q_s^* = \frac{a - 3w_s + 2w_L}{4b}. \quad (13)$$

The industry quantity is

$$Q^* = Nq_L^* + q_s^* = \frac{(3a - 2w_L - w_s)}{4b}. \quad (14)$$

Then, the market price is

$$P^* = a - bQ^* = \frac{a + 2w_L + w_s}{4}. \quad (15)$$

Within the sector, all firms earn positive profits. The profit of a large firm is

$$\pi_L^* = (P^* - c_L)q_L^* - f_L \\ = \left(\frac{a - 2c_L + 2c_s}{4}\right)\left(\frac{a - 2c_L + c_s}{2bN}\right) - f_L. \quad (16)$$

The aggregate profit of large firms is

$$\Pi_L^* = N\pi_L^* \\ = \left(\frac{a - 2w_L + 2w_s}{4}\right)\left(\frac{a - 2w_L + w_s}{2b}\right) - Nf_L. \\ . \quad (17)$$

The aggregate profit of small firms is

$$\Pi_s^* = (P^* - c_s)q_s^* - Mf_s \\ = \frac{(1 - \rho)w_s}{\rho}\left[\frac{a - 3w_s + 2w_L}{4b}\right] - Mf_s. \quad (18)$$

2. Labor Assignment

The labor supply is fixed as $\bar{L}$. Sector 1 produces the aggregate output as

$$Q_2^* = Nq_L^* + q_S^* = \frac{(3a - 2w_L - w_s)}{4b}. \tag{19}$$

Thus, aggregate labor demand is $L_2^* = Q_2^* = \frac{(3a - 2w_L - w_s)}{4b}$ because production technology is linear. That is, L_2^* agents engage in Sector 2. They sort into large or small firms

$$L_{2L}^* = Nq_L^* = \frac{(a - 2w_L + w_s)}{2b}. \tag{20}$$

Small firms demand workers as

$$L_{2S}^* = q_S^* = \frac{a - 3w_s + 2w_L}{4b}. \tag{21}$$

That is, L_{2L}^* agents work at wage w_L, while L_{2S}^* agents work at wage w_s.

Under full employment, all remainders engage in Sector 1. That is, Sector 1 demands workers as

$$L_1^* = \bar{L} - L_2 = \bar{L} - \frac{(3a - 2w_L - w_s)}{4b}. \tag{22}$$

That is, L_1^* agents engage in Sector 1 at $w_1 = 1$.

In this economy, aggregate labor income can be calculated as

$$I^* = \bar{L} - \frac{(3a - 2c_L - 2c_s)}{4b} + \frac{(a - 2w_L + w_s)}{2b} w_L$$
$$+ \frac{a - 3w_s + 2w_L}{4b} w_s. \tag{23}$$

.

By including entrepreneur profits, aggregate income is calculated as

$$Y^* = I^* + \Pi_L^* + \Pi_S^*,$$

$$= \bar{L} - \frac{(3a - 2c_L - 2c_s)}{4b} + \frac{(a - 2w_L + w_s)}{2b} w_L$$

$$+ \frac{a - 3w_s + 2w_L}{4b} w_s + \left(\frac{a - 2w_L + 2w_s}{4}\right)\left(\frac{a - 2w_L + w_s}{2b}\right)$$

$$- Nf_L + \left(\frac{1 - \rho}{\rho}\right)\left[\frac{a - 3w_s + 2w_L}{4b}\right] - Mf_s. \tag{24}$$

3. Equilibrium

Consumers spend their income on both Good 1 and Good 2. The price of Good 1 is 1, while the price of Good 2 is $P_2^* = \frac{a + 2w_L + w_s}{4}$. Under monopolistic competition, the optimal price of a small firm becomes $\frac{w_s}{\rho}$, wherein ρ is substitution elasticity. Since small firms are homogeneous, their aggregate price should be $P_s = \frac{w_s}{\rho}$. This means that there is a bound for wage w_s. That is, small firms determine wage w_s in corresponding to market price P^*. Thus, in equilibrium, their aggregate price should equal P_2^*. This means that

$$P_2^* = \frac{a + 2w_L + w_s}{4} = \frac{w_s}{\rho} = P_s \ .$$

Then, the aggregate revenue of small firms is

$$R_S^* = P^* q_S^* = \left[\frac{w_s}{\rho}\right]\left[\frac{a - 3w_s + 2w_L}{4b}\right]. \tag{25}$$

Under firm homogeneity, the mass of small firms, M, equally shares total revenue R_s^*. Each small firm obtains the revenue. Therefore, $r = \frac{R_s^*}{M}$.

In equilibrium, aggregate income equals aggregate revenue. The market clearing condition is

$$Y^* = I^* + \Pi_L^* + \Pi_S^*$$
$$= P_1^* Q_1^* + P_2^* Q_2^*$$
$$= Q_1^* + P_2^*(Nq_L^* + q_s^*). \tag{26}$$

In addition, equilibrium should satisfy the condition that $P_2^* = \frac{a + 2w_L + w_s}{4} = \frac{w_s}{\rho} = P_S$. Therefore,

$$w_S^* = \frac{\rho(a+2w_L)}{(4-\rho)}. \tag{27}$$

The condition (26) can be written as

$$\frac{(a - 2w_L + w_s)}{2b}w_L$$
$$+N\left(\frac{a - 2w_L + 2w_s}{4}\right)\left(\frac{a - 2w_L + w_s}{2b}\right) - Nf_L - Mf_s$$
$$= \left(\frac{w_s}{\rho}\right)\frac{(a-2w_L+w_s)}{2b}, \tag{28}$$

where $\quad w_s = \frac{\rho(a + 2w_L)}{(4 - \rho)}$.

With simple algebraic work, the equilibrium wages w_L^* and w_s^* are found as

$$w_L^* = \frac{2a(8-2\rho)\pm\sqrt{\left(2a(8-2\rho)\right)^2-16(4-3\rho)(4+\rho)a^2+\left(\frac{128b(4-3\rho)(4-\rho)^2(Nf_L+Mf_s)}{(N-1)(4-2\rho)}\right)}}{8(4-3\rho)}. \tag{29}$$

$$w_S^* = \frac{\rho(a+2w_L^*)}{(4-\rho)}. \tag{30}$$

IV. Heterogeneous Firms

This section analyzes how market equilibrium can change when firm heterogeneity is taken into account. Within this framework, firm heterogeneity stems mainly from heterogeneous entrepreneur ability. Large and small firms differ in organization. The organization of large firms has three layers, and the organization of small firms has two layers. For the larger scale of production, large firms hire managers to supervise production workers. Meanwhile, small firms do not need managers because the scale is small.

1. Manager Selection

From Eq. (4), the output of a large firm is

$$q(\psi, \omega, l) = \psi(\overline{\omega})^\gamma min\left\{\frac{m}{\alpha}, l\right\},$$

Where α is the control span. In assumption, skill ω follows the Pareto distribution; $G(\psi) = 1 - \psi^{-k}$. A large firm imposes skill cut-off $\widehat{\omega}$ for its managers.[11] Then, average manager skill is $\overline{\omega} = \frac{k\widehat{\omega}}{k - 1}$. The implication is that for the

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11. Bender at al. (2018) empirically showed that well-managed firms have a larger stock of higher-ability workers. Their explanation is that well-managed firms have higher-ability workers by selection. Firms can recruit workers from higher points of the ability distribution and remove those from the lower part of the distribution. Their study supports existence of a cut-off ability for selection.

12. There is empirical evidence. In the US, almost half of the workforce participates in such schemes. Kruse et al. (2009) found that 47% of US workers were contracted with a group incentive scheme in 2006. 38% of those were profit sharing, 27% gain-sharing, 18% stock ownership, and 4.6% had all three types. The effects of such schemes were reviewed by Blasi et al. (2009). Their review supports a positive association between group incentive schemes and firm performance or productivity.

large firm, a manager must possess skill $\hat{\omega}$. The large firm pays its managers base wage w_m and a group incentive.[12] Then, its firm productivity is obtained as

$$\varphi = \psi(\overline{\omega})^{\tau} = \psi\left(\frac{k}{k-1}\right)^{\tau}(\hat{\omega})^{\tau}, \tag{31}$$

Wherein τ is a parameter of social trust. If τ is one, then social trust is perfect such that manager skills are perfectly devoted to the firm. If τ is lower, managers are more likely to 'wrongly' behave (i.e., taking a bribe) in their best interest. Hence, the skills are less devoted to the firm. As explained already, the entrepreneur generates a multiplicative effect by drawing synergy from managers. Without managers, firm productivity relies entirely on entrepreneur ability ψ.[13] Large firms hire managers. Hiring managers require a sunk cost: transaction cost. Unlike in Helpman et al. (2010)[14], the sunk transaction cost can be defined as $\phi = h\hat{\omega}$, which is linear in the skill cut-off. Average manager skill improves only when skill cut-off $\hat{\omega}$ is raised. Without a loss of generality, h is assumed to be 1. Within this framework, incomplete information favors higher-ability entrepreneurs because the social network is larger. That is, they can hire managers at a lower transaction cost. There exists a tradeoff between skill cut-off and firm productivity. That is, a large firm optimizes the skill cut-off to maximize productivity as follows.

$$Max_{\hat{\omega}} \left(\frac{k}{k-1}\right)^{\tau} \psi(\hat{\omega})^{\tau} - \hat{\omega}, \tag{32}$$

where $0 < \tau < 1$.

The first order condition is

$$\tau \left(\frac{k}{k-1}\right)^{\tau} \psi(\hat{\omega})^{\tau-1} - 1 = 0. \tag{33}$$

Eq. (34) implies that the optimal skill cut-off is

$$\hat{\omega}^* = \left[\tau \left(\frac{k}{k-1}\right)^{\tau}\right]^{\frac{1}{1-\tau}} \psi^{\frac{1}{1-\tau}}. \tag{34}$$

Simply, put $\left[\tau \left(\frac{k}{k-1}\right)\right]^{\frac{\tau}{1-\tau}} = A.$

Then, the average manager skill is

$$\overline{\omega} = \frac{k\hat{\omega}^*}{k-1} = A^{\frac{1}{\tau}}\psi^{\frac{1}{1-\tau}}. \tag{35}$$

The firm productivity is

$$\varphi^* = \psi(\overline{\omega})^{\tau} = A\psi^{\frac{1}{1-\tau}}. \tag{36}$$

The implication is that higher-ability entrepreneurs choose higher skill cut-offs. He/she imposes a higher standard on managers. Eq.

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13. Within this framework, entrepreneurial ability is exogenously distributed. However, there is a study on endogenous entrepreneurial ability. Gunner et al. (2018) considered that skill investment would endogenize the distribution of entrepreneurial skill. That is, entrepreneurs can invest in skill development or education. In the present model, entrepreneurs purchase managerial skills from agents instead of time-consuming skill investment. In their work, differences in managerial quality arose from differences in selection into managing positions, along the line of Lucas (1978), and differences in skill investments since managerial ability can be changed over time by skill investment. Thus, managers are incentivized to invest in skills. The resulting endogenous skill distribution of managers causes productivity differences across countries.

14. Helpman et al. (2010) incorporated the search and matching frictions into a Melitz model. In their paper, firms sought able workers because production technology was complementary with worker ability. The productivity of a worker increased the abilities of other workers within the firm. In our paper, firms have able managers because production technology is exogenously given. The productivity of a worker increases the level of managerial quality.

(37) implies that firm productivity increases more sharply as entrepreneur ability increases $\left(\frac{1}{1-\gamma} > 1\right)$. Thus, productivity differences should be larger for large firms. Also, the distributional property of skills is a determining factor. When high-skill agents are abundant (k is lower), the skill cut-off rises.

> **Remark 1**: In equilibrium, the positive matching between average manager skill and entrepreneur ability determines the industry-level skill cut-off for managers.

When the cut-off levels are revealed, agents recognize that the levels reflect differences in entrepreneurial ability. Thus, agents want to take job offers from a higher cut-off firm because the incentive will be larger. That is, agents of talent range $[\omega_1, \infty)$ work with the highest ability entrepreneur, agents of talent range $[\omega_2, \infty)$ work with the second-highest ability entrepreneur, and so on. There exists a large firm of lowest-ability entrepreneurs. At this firm, the cut-off for manager talent $\widehat{\omega}'$ is the lowest, and represents the talent cut-off for the class of managers.

In this paper, no large firm strategically overbids the wage of manager to obstruct rivals. Similarly, no agent strategically underbids. Thus, in equilibrium, large firms simultaneously decide the cut-off manager talent. Any agent whose talent is below $\widehat{\omega}'$ finds the job of worker in the second round. Firms do not screen workers simply because production liners do not affect firm productivity. Therefore, workers are selected by educational attainment. No verification follows. In fact, all agents can be completely rank-ordered using educational attainment. In the first round, agents also submit educational attainment. However, firms verify manager talent with methods like multiple interviews or a presentation. Note that not all agents of talent range $[\omega_1, \infty)$ can be hired for the highest entrepreneurial-ability firm. Some agents of the range can work in another firm with a lower cut-off for manager talent. In this case, these agents are paid a smaller wage at the firm.

Thus, the agents do not exert full effort because they consider the lower wage to be unfair. The managers contribute less to firm productivity. Thus, firm productivity remains unchanged even though higher-talent managers are in the firm. Within a firm, there exist two groups of managers: managers of relatively higher-talent and managers of relatively lower-talent. If the talent is higher than average, he belongs to the first group. If the talent is lower than average, he belongs to the second group. Managers of the first group do not exert full effort, while managers of the second group exert full effort. Therefore, firm productivity is determined to be average.

$\widehat{\omega}$ is determined regardless of output quantity. ω_L is determined by the worker demand of large firms, which is linear in output. In this paper, output is affected by endogenous firm productivity. Sequentially, ω_s is determined once ω_L is determined.

2. Production

In Melitz (2003), firms draw productivity randomly after paying the fixed cost. That is, distribution of firm productivity is exogenous. In that paper, firms were infinitesimal. In this paper, small firms draw productivity randomly as in Melitz (2003). However, small firms take a small fraction of total output. Large firms endogenize firm productivity after paying the sunk cost for management. A small firm exits the sector if its exogenous productivity is too low. A large firm exits the sector if its endogenous productivity is too low. As large firms hire managers, the marginal cost increases to $w_L + \frac{w_m}{\alpha}$. Since productivity changes endogenously to $\varphi(\psi) = A\psi^{\frac{1}{1-\gamma}}$, the output changes to $q(l, \varphi(\psi)) = \varphi(\psi)f(l) = A\psi^{\frac{1}{1-\gamma}}l$, where l is worker inputs. The firm produces the output $q(l, \varphi(\psi)) = A\psi^{\frac{1}{1-\gamma}}l$ at the total cost $TC = \left(w_L + \frac{w_m}{\alpha}\right)l$. Thus, the marginal cost is

$c_L = \dfrac{\left(w_L + \frac{w_m}{\alpha}\right)}{A\psi^{\frac{1}{1-\gamma}}}$. There are N large firms and the coalition of small firms. For small firms, the aggregate productivity is $\bar{\psi}$. Similarly, $c_s = \dfrac{w_s}{\bar{\psi}}$.

For large firm i, the profit function is

$$\pi_i = (a - bQ)q_{iL} - c_{iL}q_{iL} - f_{iL}, \qquad (37)$$

Where f_{iL} is its fixed cost.

For the coalition of small firms, the profit function is

$$\pi_s = (a - bQ)q_s - c_s q_s - Mf_s, \qquad (38)$$

Where f_s is the fixed cost for a small firm.

Then, the profit function of the coalition is found as

$$\pi_s = \left(aq_s - b\left(q_s \sum_i q_{Li} + q_s^2\right)\right) - \left(\frac{w_s}{\bar{\psi}}\right)q_s - mf_s. \qquad (39)$$

The first order condition is found as

$$\frac{d\pi_s}{dq_s} = \left(a - b(\textstyle\sum_i q_{Li}) - 2b(q_s)\right) - \frac{w_s}{\bar{\psi}} = 0. \qquad (40)$$

For the coalition of small firms, the best response function can be found as

$$q_s = \frac{a - b\sum_i q_{Li} - \frac{w_s}{\bar{\psi}}}{2b}. \qquad (41)$$

With backward induction, large firms can find their optimal quantity.

Plugging q_s into the profit function of large firm i yields

$$\pi_{Li} = \left(a - b\sum_i q_{Li} - b\left(\frac{a - b\sum_i q_{Li} - \frac{w_s}{\bar{\psi}}}{2b}\right)\right)q_{Li} - c_{Li}q_{Li} - f_{Li}. \qquad (42)$$

The first order condition yields

$$q_i = \frac{\left(a - \frac{w_s}{2\bar{\psi}}\right) - 2c_i}{2b} - \frac{\left(\sum_{j\neq i} q_j\right)}{2}. \qquad (43)$$

The Nash equilibrium output is

$$q_i^* = \frac{\left(a - \frac{w_s}{2\bar{\psi}}\right) - 2Nc_i + 2\left(\sum_{j\neq i} c_j\right)}{5b}. \qquad (44)$$

However, entrepreneurs can observe their own ability only, and distribution of the abilities is publicly known.

Thus, at average $\bar{\psi}$, the output is

$$\bar{q} = \frac{\left(a - \frac{w_s}{2\bar{\psi}}\right) - 2\bar{c}}{5b}, \text{ where } \bar{c} = \frac{\left(w_L + \frac{w_m}{\alpha}\right)}{A\bar{\psi}^{\frac{1}{1-\gamma}}}. \qquad (45)$$

Then, the aggregate output of small firms is

$$q_s = \frac{a - bE(\sum_i q_i^*) - \frac{w_s}{\psi}}{2b} = \frac{a - bN\bar{q} - \frac{w_s}{\psi}}{2b}. \qquad (46)$$

The expected industry output is

$$E[Q^*] = N\bar{q} + q_s^*$$
$$= N\left(\frac{a - \frac{w_s}{2\bar{\psi}} - 2\bar{c}}{10b}\right) + \left(\frac{a - \frac{w_s}{\psi}}{2b}\right). \qquad (47)$$

The expected market price is

$$P^* = a - bQ^*$$
$$= \left[\frac{a(5 - N) + N2\bar{c}}{10}\right] + \left(\frac{N + 10}{10}\right)\left[\frac{w_s}{2\bar{\psi}}\right]. \qquad (48)$$

As introduced, large firms exit the industry. That is, if revenue falls below variable cost, then the large firm exits. This framework thus implies that the firm's marginal cost is higher than the market price: $c_i > P^*$. Then, the condition implies the existence of a cut-off point for large firms. The marginal large firm has its marginal cost as

$$c_i = \frac{w_L + \frac{w_m}{\alpha}}{A\psi_i^{\frac{1}{1-\gamma}}} = \left[\frac{a(5-N)+N2\bar{c}}{10}\right] + \left(\frac{N+10}{10}\right)\left[\frac{w_s}{2\bar{\psi}}\right],$$

(49)

where $\bar{c} = \frac{w_L + \frac{w_m}{\alpha}}{A\bar{\psi}^{\frac{1}{1-\gamma}}}$.

Then, the cut-off is found with

$$\psi_L^* = \left[\frac{\frac{a(5-N)+N2\bar{c}}{10}+\frac{(N+10)w_s}{20\bar{\psi}}}{\frac{w_L+\frac{w_m}{\alpha}}{A}}\right]^{\gamma-1}.$$

(50)

When average ability of large-firm entrepreneurs increases, $\bar{c}$ decreases. Then, cut-off ψ^* increases. That is, the cut-off increases in $\bar{\psi}$ and $\bar{\psi}_s$. It decreases in w_s, and increases in w_L and w_m. The exit of a small firm does not affect the market price because its production scale is too small. The exit of a large firm does not affect market price. However, the reason is different. That is, when a large firm exits, the other large firms cannot reschedule output since as the decisions are already made. This means that the large firms optimized output given number N. Although the number decreases to $(N-1)$, the optimal output of large firms does not change. As the firm exits, industry output decreases. The market share of the firm is allocated to the small firms. Thus, the market price does not change, whereas the aggregate output of small firms increases. Thus, small firms benefit from the exit of a large firm. The cut-off for small firms goes down. As in Melitz (2003), higher-ability entrepreneurs benefit more than lower-ability entrepreneurs within the coalition of small firms.

2.1. Large Firms

Due to the idiosyncratic difference in entrepreneurial ability, firm productivity differs across large firms. Without firm heterogeneity, each large firm produces $q_L = \frac{(a-2w_L+w_s)}{2bN}$. Now, firms are heterogeneous. For large firm i, the cut-off talent is $\omega_i^* = \tau A\psi_i^{\frac{1}{1-\tau}}$, and firm productivity is $\varphi_i^* = A\psi_i^{\frac{1}{1-\gamma}}$. Thus, the marginal cost is $c_{Li} = \frac{w_L + \frac{w_m}{\alpha}}{A\psi_i^{\frac{1}{1-\tau}}}$. The output of large firm i is

$$q_{Li}^* = \frac{\left(a-\frac{w_s}{2\bar{\psi}}\right)-2Nc_i+2\left(\sum_{j\neq i}c_j\right)}{5b}.$$

(51)

However, entrepreneur abilities are not observable. Only its average is known.

The average firm profit is

$$\begin{aligned}\bar{\pi} &= (P^* - \bar{c})\bar{q} - (f + \bar{\phi})\\&= \left[\frac{a(5-N)+2(N-5)\bar{c}}{10}+\frac{(N+10)w_s}{20\bar{\psi}}\right]\left(\frac{a-\frac{w_s}{2\bar{\psi}}-2\bar{c}}{5b}\right)\\&\quad - \left(f + \tau A\bar{\psi}^{\frac{1}{1-\tau}}\right).\end{aligned}$$

(52)

Thus, the aggregate profits of large firms is

$$\begin{aligned}N\bar{\pi} &= N\left[\frac{a(5-N)+2(N-5)\bar{c}}{10}+\frac{(N+10)w_s}{20\bar{\psi}}\right]\left(\frac{a-\frac{w_s}{2\bar{\psi}}-2\bar{c}}{5b}\right)\\&\quad - N\left(f + \tau A\bar{\psi}^{\frac{1}{1-\tau}}\right).\end{aligned}$$

(53)

Then, the aggregate labor demand of large firms is

$$L_L^* = N\bar{q}_L = \frac{N\left[a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right]}{5b}.$$

(54)

Thus, the aggregate labor income is

$$\left(w_L + \frac{w_m}{\alpha}\right) L_L^* = \frac{\left(w_L + \frac{w_m}{\alpha}\right) N \left[a - \frac{w_s}{2\overline{\psi}} - 2\bar{c}\right]}{5b}. \quad (55)$$

2.2. Small Firms

With skilled managers, the production efficiency of large firms improves, and their aggregate output expands. The output expansion squeezes out the aggregate output of small firms. The best response function for coalition of small firms is $q_s = \frac{a - bNq_L - w_s}{2b}$. Under firm heterogeneity, the aggregate output of small firms is

$$q_s = \frac{a - b \sum_i q_i^* - \frac{w_s}{\psi}}{2b}$$
$$= \frac{a(5-N)+2N\bar{c}}{10b} + \left(\frac{N-10}{20b}\right)\frac{w_s}{\overline{\psi}}. \quad (56)$$

In the case of heterogeneous firms, the actual prices of small-firm products depend on entrepreneur ability. The price distribution is random, while aggregate price equals market price P^*. Within the coalition, there is a continuum of small firms and different qualities. Unlike large firms, the productivity of small firms stems entirely from entrepreneur. Irrelevant of productivity, each small firm faces a residual demand curve with constant elasticity σ. A small firm has the price

$$p(\psi) = \frac{w_s}{\rho\psi}. \quad (57)$$

The small firm of the higher-ability entrepreneur sells its product at a lower price. Within the coalition of small firms, market shares are reallocated from lower-ability entrepreneurs to higher-ability entrepreneurs. However, the reallocation does not change the aggregate quantity and aggregate price.

The aggregate profit of small firms is

$$\Pi_s = P^* Q_s - w_s Q_s - M f_s =$$
$$\left[\frac{a(5-N)+2N\bar{c}}{10} + \left(\frac{N+10}{20\overline{\psi}} - 1\right) w_s\right]\left[\frac{a(5-N)+2N\bar{c}}{10b} + \left(\frac{N-10}{20b}\right)\frac{w_s}{\overline{\psi}}\right] - M f_s. \quad (58)$$

Pointedly, the output expansion of large firms squeezes out small firms. Thus, selection occurs for the entrepreneurs of small firms, as in Melitz (2003). Lower-ability entrepreneurs exit the sector. There exists the cut-off entrepreneur ability of ψ^* for small firms. A small firm produces output as

$$q = \left(\frac{p(\psi)}{P_s^*}\right)^{-\sigma} q_s^*. \quad (59)$$

Its revenue is

$$r(\psi) = p(\psi)q(\psi) = \left(p(\psi)\right)^{1-\sigma}(P_s^*)^{\sigma}Q_s^*. \quad (60)$$

Then, $\quad \pi(\psi) = \frac{r(\psi)}{\sigma} - f_s. \quad (61)$

At the ability cut-off ψ^*, the small firm earns zero profit. That is,

$$\pi(\psi^*) = \frac{r(\psi^*)}{\sigma} - f_s = 0. \quad (62)$$

Eq. (62) implies that

$$r(\psi^*) = \left(\frac{w_s}{\rho\psi^*}\right)^{1-\sigma}(P_s^*)^{\sigma}Q_s^* = \sigma f_s. \quad (63)$$

Thus, the ability cut-off ψ_s^* is

$$\psi_s^* = \left[\frac{\sigma f_s}{(P_s^*)^{\sigma}Q_s^*}\right]^{\frac{1}{\sigma-1}}\frac{w_s}{\rho}, \quad (64)$$

where $P_s^* = P^* = \left[\frac{a(5-N)+N2\bar{c}}{10}\right] + \left(\frac{N+10}{10}\right)\left[\frac{w_s}{2\overline{\psi}}\right],$

and $Q_S^* = \left[\frac{a(5-N)+2N\bar{c}}{10b} + \left(\frac{N-10}{20b}\right)\frac{w_s}{\psi}\right].$

The implication behind Eq. (29) is that the ability cut-off ψ_s^* rises as w_s increases. As the aggregate output q_s^* increases, the ability cut-off ψ_s^* falls. This means that lower-ability entrepreneurs can enter the sector to earn profits. As the aggregate output q_s^* decreases, the skill cut-off ψ_s^* rises. This means that more entrepreneurs should exit the sector.

3. Equilibrium

In this economy, total spending is

$P_1^* Q_1^* + P_2 Q_2 =$

$\left[\frac{a(5-N)+N2\bar{c}}{10} + \frac{(N+10)w_s}{20\bar{\psi}} - 1\right]\left[\frac{N\left(a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right)}{10b} + \frac{\left(a-\frac{w_s}{\psi}\right)}{2b}\right]$

$+\bar{L} - \frac{\left(\frac{N}{\alpha}\right)\left[a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right]}{b}.$ (65)

In equilibrium, two markets clear: the labor market and products market. Since production technology is linear in worker inputs, the aggregate output of large firms indicates total labor demand (workers and managers). The total worker demand of large firms equals

$$L_w^* = \frac{N\left[a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right]}{5b}.$$ (66)

Thus, in Industry 1, the aggregate labor income is

$\left(w_L + \frac{w_m}{\alpha}\right)L_w^* + w_s L_S^*$

$= \frac{N\left(w_L+\frac{w_m}{\alpha}\right)\left[a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right]}{5b} + w_s\left[\frac{a(5-N)+2N\bar{c}}{10b} + \left(\frac{N-10}{20b}\right)\frac{w_s}{\psi}\right].$

In Industry 2, the aggregate labor income is

$L_2^* = \bar{L} - \bar{L} - \left[\frac{N\left[a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right]}{10b} + \left(\frac{a-\frac{w_s}{\psi}}{2b}\right)\right]$

$\quad - \frac{\left(\frac{N}{\alpha}\right)\left[a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right]}{5b}.$ (67)

Let I^* denote aggregate labor income in this economy. Then,

$$I^* = \left(w_L + \frac{w_m}{\alpha}\right)L_w^* + w_s L_S^* + L_2^*.$$ (68)

Aggregate income includes the profits of entrepreneurs within the economy.

The aggregate profit of large firms is

$N\bar{\pi} =$

$N\left[\frac{a(5-N)+N2\bar{c}}{10} + \frac{(N+10)w_s}{20\bar{\psi}} - \bar{c}\right]\left[\frac{a-\frac{w_s}{2\bar{\psi}}-2\bar{c}}{5b}\right]$

$-N\left(f + \tau A\bar{\psi}^{\frac{1}{1-\tau}}\right).$ (69)

The aggregate profit of small firms is

$\Pi_s^* = P_S Q_S - w_s Q_S - M f_s$

$= \left[\frac{a(5-N)+2N\bar{c}}{10} + \left(\frac{N+10}{20\bar{\psi}} - 1\right)w_S\right]\left[\frac{a(5-N)+2N\bar{c}}{10b} + \left(\frac{N-10}{20b}\right)\frac{w_s}{\psi}\right] - M f_s.$ (70)

Thus, aggregate income is

$$Y^* = I^* + \Pi_L^* + \Pi_s^*.$$ (71)

Total spending is

$P_1 Q_1^* + P_2 Q_2^* =$

$\left[\frac{a(5-N)+N2\bar{c}}{10} + \left(\frac{N+10}{10}\right)\left(\frac{w_s}{2\bar{\psi}}\right) - 1\right]\left[\frac{N\left(a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right)}{10b} + \frac{\left(a-\frac{w_s}{\psi}\right)}{2b}\right]$

$+\bar{L} - \frac{\left(\frac{N}{\alpha}\right)\left[a-\frac{w_s}{2\bar{\psi}}-2\bar{c}\right]}{b}.$ (72)

In equilibrium, aggregate income equals total spending. Thus,

$$Y^* = I^* + \Pi_L^* + \Pi_s^* = P_1 Q_1^* + P_2 Q_2^*.$$ (73)

As the market clearing condition, Eq. (57)

implies the relationship among w_s, w_L, and w_m. In equilibrium, w_m is determined with w_L, which is determined with w_s. That is, w_m and w_L can be written as w_s in equilibrium.

V. Conclusion

This paper has presented a tractable model of general equilibrium in the presence of large firms. Within the framework, there are two sectors, and the competition modes are different. One sector is under perfect competition, and firms have no market power. Meanwhile, another sector is under oligopoly, and firms have market power. The sector comprises a countable number of large firms and a continuum of small firms. Large firms have market power, while small firms have no market power. However, small firms form a coalition for collective choice. Only when small firms cooperate does the coalition of small firms have market power. Within the coalition, small firms compete monopolistically. This study emphasizes two points. One point is that large firms endogenize productivity using manager skills, while small firms accept exogenous productivity. Large firms have incentives to hire high-skill managers to upgrade productivity. Thus, the organization has three layers: an entrepreneur, managers, and workers. In contrast, small firms have no incentives to hire managers because the production scale is small. Thus, the organization of small firms has two layers: an entrepreneur and workers.

The management of small firms rely entirely on entrepreneur ability. Large firms gain benefits from organizational management. However, the benefit differs across entrepreneurs. A firm with higher-ability entrepreneurs gains larger benefits from organizational management. As managers sharpen production efficiency for large firms, the total output of large firms expands. In turn, the output expansion squeezes out the aggregate output of small firms, and causes the firm-selection effect within the coalition of small firms. Small firms of higher-ability entrepreneurs expand, while small firms of lower-ability entrepreneurs exit the sector. Large firms impact upon not only the product market but also the labor market. Large firms affect the pattern of labor demand by creating higher-paying jobs for skills. As large firms strengthen market leadership, the impact should be larger. With the impact, aggregate income increases and wage inequality widens. This study can be extended. Throughout this paper, the number of managerial layers is fixed. However, the number might be endogenous. Large firms of higher-ability entrepreneurs might have greater or smaller numbers of managerial layers. In this case, the wage structure would be endogenous as well. This study considers only the production factor of labor. If capital is incorporated into the model, the production efficiency of large firms improves more sharply. As a result, wage inequality widens further. This will affect the pattern of firm selection within the coalition of small firms. Such topics are left for future research.

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The Nexus of Teamwork, Communication Competence, and Employee Performance: The Mediating Role of Employee Competence

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ABSTRACT

Purpose – This paper aims to explore how employee performance is impacted by factors such as teamwork, communication competence, and employee competence in several countries and industries. Currently, there is no existing literature that acknowledges aspects related to teamwork, communication competence, and employee competence impact on employee performance within the context of a Indonesian public service organization.

Design/Methodology/Approach – The study employs a quantitative method using a path analysis model. This study involved the analysis of data from 205 employees working in a public service organization. The reliability and validity of the questionnaire items are conducted via Kaiser–Meyer–Olkin (KMO) analysis, and the related hypotheses are tested using the path analysis model.

Findings – The results showed the positive impact of teamwork, communication competence, and employee competence on employee performance. Additionally, employee competence mediated the influences of teamwork and employee performance. Also, employee competence mediated the impacts of communication competence and employee performance.

Research Implications – The research was conducted within a specific Indonesian public service organization, making it challenging to apply the findings universally across various sectors and international contexts. The results of the research hold the promise to assist leaders within public service organizations in creating approaches that enhance the skills of employees. This involves designing impactful human resource development initiatives and boosting the employee capacity to reach the organization's intended aims and objectives. The study is new in its effort to bring together four frameworks to create a novel performance model explaining the importance of teamwork and communication competence with employee competence and employee performance.

Keywords: communication competence, employee competence, employee performance, teamwork
JEL Classifications: J81, M12, M21

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I. Introduction

Communication competence leads to performance among public service employees (Yu & Ko, 2017). Ismanto et al. (2021) stated that low communication competence is the cause of inadequate communication skills, reduced employee responsiveness, and subpar online services among public service employees. Furthermore, public service employees acknowledge that communication is the most challenging task, underscoring the necessity of ensuring that all employees possess adequate communication competencies (Ismanto et al., 2021).

Communication competence has been confirmed as a valuable source for enhancing public service within public organizations (Steele & Plenty, 2015). Studies concerning communication competence among employees have investigated its relevance to employee competence and performance (Steele & Plenty, 2015), as well as teamwork (Potnuru et al., 2019). Overall, research findings indicate that communication competence plays an important role for employees.

In addition to communication competence, other important factors influencing employee performance are teamwork and employee competence. Teamwork refers to shared strategies of thinking and behavior utilized collectively to enhance collaboration, emphasizing autonomy as a fundamental human trait. The aim of teamwork is to improve service to the community within public organizations. Teamwork approaches should prioritize team efforts over individual work, be based on equality aspects, and involve participation from all organizational members (Potnuru et al., 2019).

The significance of this research focuses on enhancing employee performance for the benefit of public services. Specifically, this study examines the impacts of teamwork and communication competence on employee competence, which, in turn, affect employee performance. The influences of teamwork, communication competence, and employee competence on employee performance

are also be elucidated. Employees with low levels of communication competence tend to exhibit low employee competence, resulting in subpar job performance (Yu & Ko, 2017).

The impact of teamwork on performance tends to be stronger when it is supported by high employee competence. Meanwhile, employees with high levels of employee competence tend to experience a heightened relationship between teamwork, communication competence, and employee performance. Thus, situations in which the effects of teamwork and communication competence on employee performance are mediated by employee competence will be analyzed. This analysis will enrich the existing literature on teamwork and communication competence by shedding light on how both factors can enhance job performance.

Despite existing confirmations of the relationship between teamwork and organizational outcomes (Salas et al., 2015), as well as the relationship between communication competence and performance (Yu & Ko, 2017), there has been no confirmation regarding the mediating role of employee competence in the relationship between teamwork, communication competence, and employee performance. Therefore, this research aims to investigate correlations among teamwork, communication competence, and job performance in employees working in public services.

Building upon previous studies that discussed employee competence as a mediator between teamwork and communication competence, this research contributes to the existing knowledge by considering the role of employee competence as a mediator. By deepening the understanding of the interaction among teamwork, communication competence, and employee performance, the findings of this study may provide valuable insights for public services regarding the reasons behind employee actions. Ultimately, these insights could assist in making strategic decisions in the field of human resource management.

The present research combines ideas from the resource-based view introduced by Barney (2018), along with the perspective of competence. This

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combination establishes a robust theoretical basis for investigating how teamwork, communication competence, and employee competencies influence employee performance. Through empirical evidence, this study addresses gaps in knowledge related to the impact of teamwork, communication competence, and employee competencies on employee performance. Despite the importance of teamwork, communication competence, and employee competence, most existing literature focuses on theoretical aspects and considers commitment, productivity, and satisfaction the primary outcomes (Arunachalam & Palanichamy, 2017; Potnuru et al., 2019; San-Valero et al., 2019). Only a limited number of studies have explored how employee competencies, such as commitment, engagement, and satisfaction, mediate these relationships (Huang et al., 2018; Rai & Maheshwari, 2021). Therefore, the significance of this study lies in empirically confirming the role of employee competence in mediating the connections among teamwork, communication competence, and employee performance.

Therefore, this study aims to identify the relationships among teamwork, communication competence, employee competence, and employee performance. More specifically, this research will investigate the influence of teamwork and communication competence on employee competence, while also determining the mediating impact of communication competence on the relationship between teamwork and employee competence.

II Literature Review

1. Teamwork and Employee Performance

Potnuru et al. (2019) provided the definition of "teamwork" as "the ability of an individual to develop, support, and lead a team to achieve goals". It represents the demonstration of required behaviors and a positive mindset among team members, which is essential for realizing both personal and organizational aims. According

to Marcus and Le (2013), teamwork entails collaborative efforts, information sharing, and improved resource allocation, leading to the enhancement of employee performance. It fosters cooperative and effective teams, facilitates the attainment of group objectives, enhances quality, increases team involvement, and improves overall organizational efficacy. In recent years, the significance of teamwork has garnered substantial attention within various organizations, prompting them to devise strategies aimed at fostering and nurturing employee collaborative abilities. This ultimately contributes to heightened and sustained organizational growth. Consequently, the hypothesis below is posited.

H1: Teamwork influences employee performance.

2. Communication Competence and Employee Performance

Communication competence refers to "the ability to select from available communicative behaviors to achieve one's own interpersonal goals during an interaction while upholding the dignity and reputation of fellow participants within the contextual boundaries" (Potnuru & Sahoo, 2016). Communication competence encompasses attributes that encompass individual knowledge, skills, and abilities (KSAs) required for the effective "sharing of information, ideas, thoughts, and emotions with others" (Robbins & Judge, 2022). To possess communicative competence, an individual needs to effectively employ communicative tools like language, tone, and gestures in suitable ways (Boyd, 1991). This involves active listening, clear and concise expression, prompt sharing, and response to information (Ewing et al., 2019). Communication competence plays a pivotal role in fostering productive and collaborative team formation, enhancing employee performance, mitigating conflicts within organizations, promoting employee engagement (Elbaz et al., 2018), and bolstering employee productivity, job satisfaction, and organization commitment (Oluwatomilola,

2016). Consequently, this leads to enhanced employee performance. As a result, we posit the following hypothesis.

H2: Communication competence impacts employee performance.

3. Employee Competencies and Employee Performance

Salman et al. (2020a) defined Employee Competence as the "ability to adjust to change, readiness to learn, readiness to develop oneself, readiness and ability to initiate action, trust, endurance, receptiveness, broad-mindedness, self-discipline, self-esteem, individuality, and self-determination". It encompasses a spectrum of knowledge, skills, and abilities used to identify personal strengths and weaknesses, evaluate personal and professional goals, manage oneself during stressful situations, and comprehend and address work-related motivations and emotions (Elbaz et al., 2018). It is contended that "self-competence augments employees' capabilities, efficiency, performance, success, and adaptability in stressful situations" (Salman et al., 2020b). Research indicates that self-competence holds a significant and positive correlation with organizational commitment (Cetin et al., 2015) and job satisfaction (Bhagat & Allie, 1989), thus leading to enhanced employee performance. Essentially, employee competence stands as an important determinant of employee performance levels, thereby aiding organizations in successfully attaining objectives and achieving superior performance (Potnuru & Sahoo, 2016). Consequently, we propose the following hypothesis.

H3: Employee competence influences employee performance.

4. Teamwork and Employee Competence

Teamwork is not only the cornerstone of successful management but also an important tool for enhancing employee competence as a whole.

Hanaysha (2016) revealed that teamwork increased employee competence and drove higher levels of employee performance. Through teamwork, each employee has a chance to share professional approaches to specific tasks with colleagues. Within a team environment, employees can exchange knowledge and learn from one another, thereby enhancing employee competence and overall team performance. Consequently, we believe that by embracing collaboration among team members, the prospects for collective learning and improving employee competence will be significantly amplified. Previous research has confirmed that teamwork has a positive impact on employee competence and job performance (Senen et al., 2017). Furthermore, Senen et al. (2017) asserted that effective teamwork activities can lead to increased employee competence and higher job performance. Accordingly, we propose the hypothesis below.

H4: There is a significant impact of teamwork on employee competence.

5. Communication Competence and Employee Competence

Communication competence refers to an individual's skills in effectively communicating, including the ability to convey information clearly, listen attentively, and interact with others productively (Salman et al., 2020a). On the other hand, employee competence pertains to the combination of skills, character, quality, capacity, and capability that support job performance and organizational outcomes (Abas & Imam, 2016). Several prior studies have explored the relationship between communication competence and employee competence (He et al. 2019; Mikkelson et al. 2015; Steele & Plenty, 2015). found that high communication competence enhanced employee performance by facilitating effective information sharing and team collaboration. Additionally, Alsabbah & Izwar Ibrahim (2013) affirmed that employee competence encompasses aspects relevant to communication competence,

such as the ability to interact with colleagues and convey ideas clearly. Accordingly, we propose the following hypothesis.

H5: Teamwork has a significant impact on employee competence.

6. Employee Competence as Mediator

Mishra (2014) argued that employee consist of groups of individuals that are interdependent in performing tasks and share responsibility for the outcomes. Teams enable individuals to collaborate, enhance personal skills, and provide constructive feedback without interpersonal conflicts (Aga et al., 2016). Teamwork plays a significant role in ensuring the smooth functioning of an organization. Given the increasing complexity of most organizational activities due to technological advancements, teamwork has become a primary focus for many organizations. Participation in teams offers members the opportunity to improve skills, knowledge, and abilities, ultimately positively impacting employee performance (Mishra, 2014).

Organizations that emphasize teamwork tend to achieve enhanced employee performance, higher productivity, and improved problem-solving abilities in the workplace (Mishra, 2014). Bacon and Blyton (2006) underscored two important factors: self-management within teams and interpersonal team skills. These factors enhance communication and interpersonal relationships among team members, thereby contributing to employee performance. Teamwork serves as a vital tool in the structure of the modern organization, providing a relevant measure that exhibits various features across different types of organizations, including nonprofit entities. A research study concluded that effective managers entrust responsibilities to employees in the form of groups or teams to maximize employee efforts (DeRosa et al., 2004). Another study affirms that enabling the design of team development systems within each organization is a step toward promoting and disseminating best practices while optimizing

outcomes. The primary focus in designing and implementing such systems ultimately resides in enhancing employee learning (Carvalho, 2016). DeRosa et al. (2004) posited that teamwork is a potential strategy for improving individual and organizational performance, yet it requires continuous nurturing over time. Organizations must formulate strategies to enhance performance in an increasingly competitive environment. Top managers need to have a vision to introduce team-based activities within the organization, possess the sensitivity to sustain such initiatives, and exhibit the courage to grant teams a pivotal role in decision-making. O'Neill and Salas (2018) asserted that teams offer opportunities for participation, challenges, and greater senses of accomplishment.

Employees require supervisors to guide them in setting objectives for communication, enabling them to effectively complete tasks in the workplace (Ewing et al., 2019). When supervisors clearly communicate expectations, goals, and procedures, employees become better equipped to carry out job-related tasks (Hynes, 2012; Mikkelson et al., 2015). Effective communication from supervisors assists employees in enhancing their job skills, thereby establishing a positive correlation between effective communication and employee competence (Mikkelson et al., 2021).

Similarly, employees need to possess competencies to concentrate on their tasks, ensuring successful task completion. Employee focus on these tasks aids in achieving predefined goals and contributes to personal competency enhancement (Yukl & Gardner, 2019). Employees concentrating on tasks tend to elevate their performance and contribute to accomplishing job-related goals; thus, the competency of task-oriented employees should also exhibit a positive correlation with employee performance.

H6: Employee Competence mediates the relationship between teamwork and employee performance.

H7: Employee Competence mediates the relationship between communication competence and employee performance

III. Research Methodology

1. Data Collection

For this study, data were gathered using a 25-item questionnaire developed by the researchers. The questionnaire was divided into two sections: Part 1 contained five questions related to participant backgrounds, while Part 2 consisted of 20 questions focusing on functionality at the organizational level. In Part 2, participants were asked to rate teamwork, communication competence, employee competence, and employee performance using a Likert scale ranging from "strongly agree" to "strongly disagree". The survey was administered online via Google Drive, with a total of 205 participants completing it.

2. Study Participants

Participants for this study were selected via snowball sampling. Snowball sampling is a suitable method for sensitive studies wherein participant identities need protection (Berndt, 2020). Due to the sensitive nature of the study, which involved participants rating their current or well-known organizations, the researcher used snowball sampling to minimize risks. A few individuals were initially recruited from various public organizations across Indonesia, who then invited others, creating a snowball effect. Participant background information was used to filter the responses. Among the 205 respondents, 55.61 percent were male and 44.39 percent were female. Participant education levels varied, with 5.37 percent holding doctoral degrees, 15.61 percent having Master's degrees, 34.15 percent completing undergraduate degrees, and around 44.88 percent having associate degrees or some college coursework. Years of work experience also varied, with 34.15 percent having over 20 years of experience, 14.15 percent having 10 to 19 years, 44.39 percent having 5 to 9 years, and the remaining 7.32 percent having 4 years or less.

3. Data Analysis

The data were subjected to analysis using SPSS Version 23. The analytical process for this study involved several sequential steps. First, a multiple-factor analysis was performed to condense the extensive item list and generate a more manageable set of variables for further analysis. Subsequently, the original set of 20 items categorized into four variables (Teamwork, Communication Competence, Employee Competence, and Employee Performance) was tested to determine reliability using factor analysis and the Kaiser–Meyer–Olkin measure of sample adequacy. Additionally, the reliability of the identified factors was evaluated through Cronbach's α. After organizing the data for analysis, a series of multiple regression analyses were performed. The findings from each of these analyses are shown below.

Table 1. Variable Factorability

Variable	KMO
Teamwork	0.74*
Communication Competence	0.79*
Employee Competence	0.87*
Employee Performance	0.76*

Note: *$p \leq 0.05$.

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Based on Table 1, the four variables show KMO levels ranging from 0.74 to 0.87. Variables with a KMO level above 0.5 are generally considered factorable. Once factorability was confirmed, principal component analyses were carried out for each of the four variables, resulting in the formation of four variables: Teamwork, Communication Competence, Employee Competence, and Employee Performance. Each

variable required a minimum inclusion coefficient of 0.63, in line with the rule of thumb presented by Comrey and Lee (1992). The guideline indicates excellent consistency at ≥0.7, very good at ≥0.63, good at ≥0.55, and fair at ≥0.45.

As depicted in Table 2, all variables exhibited α levels of ≥0.80, indicating a high degree of internal consistency among the items within each variable.

Table 2. Reliability Results

Variable	α
Teamwork	0.74*
Communication Competence	0.79*
Employee Competence	0.87*
Employee Performance	0.76*

Note: $*p \leq 0.05$.

Path analysis was employed to gauge the extent of association between exogenous variables (EXs) and endogenous variables (EDs). This method reveals the orientation, connection, and degree of influence that variables exert within a model. One approach to conducting path analysis involves a series of multiple regression procedures. The coefficients derived from multiple regression analyses serve as path coefficients, wherein the standardized β score indicates the magnitude of the impact of EXs on ED.

IV. Results and Discussion

In the first model, the EXs comprised three variables: Teamwork, Communication Competence, and Employee Competence, The ED for this initial regression was employee performance, encompassing all survey instrument items. Participants assigned ratings to their respective organizations using a 5-point scale, ranging from "strongly disagree" (1) to "strongly

agree" (5). Utilizing stepwise multiple regression, two out of the three EXs were retained, yielding Model II, wherein Teamwork and Communication Competence demonstrated direct and significant influences on the ED, Employee Competence. The research found that teamwork, communication competence, and employee competence play a significant role in enhancing employee performance. Furthermore, the results confirm that employee competence also has a role in mediating the aforementioned relationships. Detailed insights into these findings are elaborated below.

1. Results

To assess the indirect effects of the remaining two EXs (Teamwork and Communication Competence) on Employee Performance through the mediator of Employee Competence, a sequence of multiple regression analyses was conducted. Table 3 provides an overview of EDs and EXs for each regression analysis, along with the associated R^2 and standardized β statistics.

Table 3. Regression Model Results

Model	Independent Variable	Dependent Variable	β	R²	Sig.
I	Teamwork Communication Competence Employee Competence	Employee Performance	0.519 0.174 0.245	0.712	0.000 0.035 0.002
II	Teamwork Communication Competence	Employee Competence	0.462 0.295	0.494	0.000 0.005

According to Model I in Table 3, approximately 71.20% of the variance in Employee Performance (EP) can be accounted for by the interplay among Teamwork (T), Communication Competence (CC), and Employee Competence (EC). In Model II, Teamwork and Communication Competence collectively explained 49.40% of the variance in Employee Competence.

Direct and indirect influences of EXs on each ED are illustrated in Figure 1 through a path model coefficient diagram and path structure. Fig. 1 visually represents the employee performance model derived from this study, while Fig. 2 elucidates the process of path structure.

Fig. 1. Path Model of Employee Performance
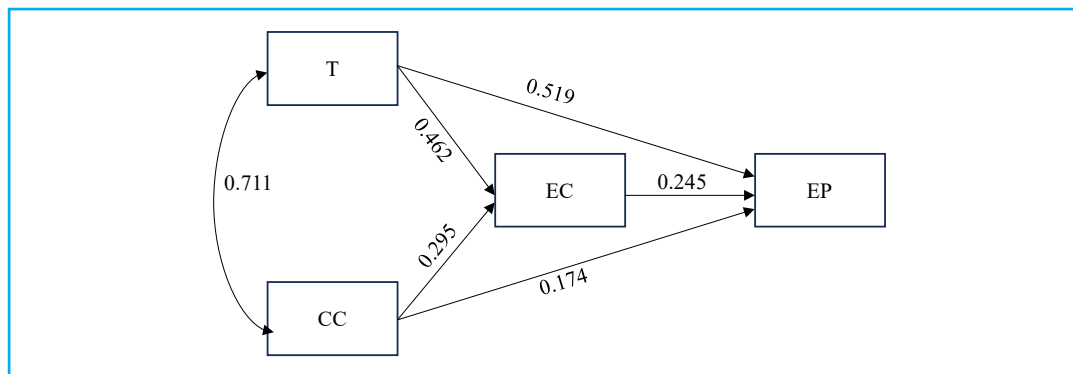
Fig. 2. Path Structure of Employee Performance

Direct
T → EP = 0.519
CC → EP = 0.174
EC → EP = 0.245

Indirect
T → EC → EP = β_{EFEC} X β_{ECT} = 0.245 X 0.462 = 0.113
CC → EC → EP = β_{EFEC} X β_{ECCC} = 0.245 X 0.295 = 0.072
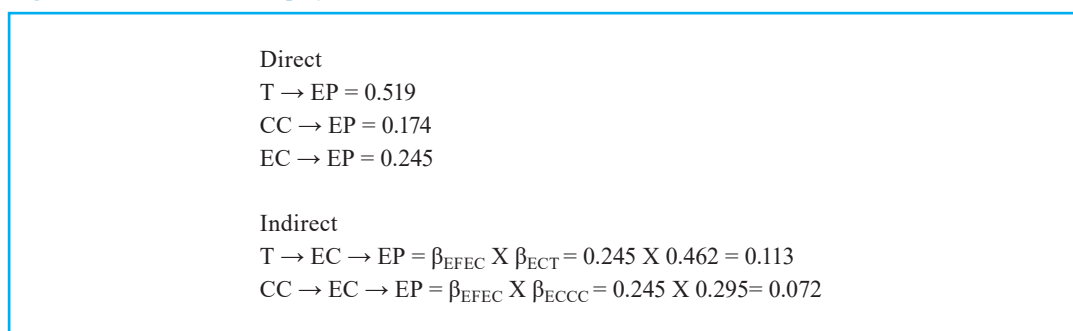
Table 4 outlines the immediate and indirect impacts of each EX on employee performance. Consequently, Teamwork, Communication Competence, and Employee Competence emerged as the three of variables exerting direct influence on employee performance, with corresponding β values of 0.519, 0.174, and 0.245, respectively. Likewise, Teamwork and Communication Competence were identified as the two variables with a direct impact on Employee Competence, with β values of 0.462 and 0.295, respectively.

Table 4. Path Analysis Results

Variable	Effect		Total
	Direct	Indirect	
Teamwork	0.519	0.113	0.632
Communication Competence	0.174	0.072	0.246
Employee Competence	0.245	-	0.245

Moreover, Teamwork and Communication Competence exerted indirect effects on employee performance through Employee Competence, with combined β values of 0.365 and 0.247, respectively.

2. Discussion

The results of the data analysis suggest that three variables related to individual and group organizational behavior levels, which were obtained through factor analysis (Teamwork, Communication Competence, and Employee Competence), showed significant impacts on Employee Performance. These variables were used to develop a model for Employee Performance, wherein the degree of influence that each variable has on Employee Performance varied.

The initial finding highlighted that variables related to Employee Competence had direct effects on employee performance. This finding aligns with various studies in the field of public services that focus on employees. Scholars like Bowen and Ostroff (2004) and Abas and Imam (2016) emphasized the favorable contributions of a competent employee to overall employee performance. The concept of Employee Competence is often described using the term "communities of professionals", which signifies interactions among public service staff aimed at delivering exceptional service to positively influence public outcomes, a widely accepted measure of effectiveness in public service organizations. Furthermore, the positive influence of Employee Competence on Employee Performance identified in this study corroborates the findings from previous investigations on public service personnel. For instance, Yang et al. (2016) and Almusaddar et al. (2014) found a statistically significant and positive correlation between Employee Competence and achievements in public services. Similarly, Demircioglu and Audretsch (2017) argued that they were unable to find any instances where public service organizations improved service achievements without the presence of Employee Competence. Vathanophas (2007) additionally emphasized that the impact of Employee Competence on public service is the second most important variable, ranking just after procedural guidance. In line with these findings, our study found a comparable result, indicating that Employee Competence stands as the second most important variable affecting employee performance.

In this study, we identified direct impacts of Teamwork and Communication Competence on employee performance, contributing indirectly to the overall model. Similarly, we observed that Teamwork and Communication Competence indirectly influence employee performance through employee competence. Previous studies examining the effects of Teamwork and Communication Competence align with the findings of this investigation (Jakobsen et al., 2023; Redmond, 2013; Yu & Ko, 2017). Likewise, Communication Competence establishes the pathways by which tasks are achieved. Effective public service organizations have pre-established frameworks, activities, and operations that guarantee the streamlined fulfillment of task and obligations (Hanaysha, 2016; Jałocha et al., 2014; Potnuru et al., 2019). In the absence of consistently dependable approaches for carrying out public service functions, inefficiency can compromise the effectiveness of employee communication.

It is important to acknowledge that path analysis studies inherently rely on assumptions provided by scholars. In the context of this study, the assumptions encompass three core elements within organizations: Teamwork, Communication Competence, and Employee Competence, all of which contribute to Employee Performance. The study considers both individual and group levels within organizational behavior. Additionally, the study posits a cause-and-effect relationship between Teamwork, Communication Competence, Employee Competence, and Employee Performance. Furthermore, it's worth noting that future studies employing different variables and alternative assumptions may not necessarily yield identical outcomes. This model can serve as a starting point for further research, and its effectiveness can be enhanced by building upon the assumptions and variables integrated within this model.

V. Conclusion

The results of this study offer valuable theoretical insights in several ways. First, it deepens the understanding of how teamwork and communication competence impact employee performance, with employee competence playing a mediating role. The findings affirm that when employees possess positive competencies, the connection between teamwork and communication competence becomes stronger. Creating a work environment that supports continuous employee development and fostering the acquisition of new knowledge and skills can enhance the relationship between teamwork and communication skills. This study supports the idea that positive employee competence amplifies the impact of teamwork on employee competency. Furthermore, by demonstrating that employee competence serves as a mediator between teamwork, communication skills, and employee performance, this study contributes to the resource-based view, particularly from a contingency standpoint. Additionally, it extends the applicability of these concepts (teamwork, communication competence, and employee competence) to a novel context, specifically, the emerging economy of Indonesia. It highlights that in such dynamic and uncertain environments, implementing teamwork and communication competence can enhance employee performance by elevating employee competency levels.

According to Barney (2018), there is widespread agreement today that an important factor for organizations to gain a competitive edge is the capacity to adapt and respond effectively to challenges arising from both internal operations and external surroundings. It is clear that significant emphasis should be placed on nurturing employee competence to improve performance, ultimately leading to the creation of a competitive advantage and increased organizational effectiveness. The paper's findings also provide recommendations for managers striving for success. To begin, based on the results of mediated path analysis, managers should acknowledge that merely promoting teamwork and communication competence is insufficient. The organization must take responsibility for fostering employee

competence to enhance employee performance. Firstly, based on the findings of mediated path analysis, managers should acknowledge that merely offering teamwork and communication competence is insufficient. It becomes the organization's responsibility to increase employee competence in order to improve employee performance.

Secondly, organizations must capitalize on employee competence by emphasizing the significance of managers and their attitudes in effectively implementing conditions for employee competence within the organization. This highlights that managers play a crucial role in fostering employee competence within the organization, and this can be accomplished by integrating the attributes of employee competence in a manner that makes competence development the primary driver of employee proficiency (Salman et al., 2020a).

Thirdly, the clear implication from the study's findings is that employee competence is the primary and most important factor within any business process aimed at enhancing employee performance. Consequently, managers that aspire to achieve effectiveness and efficiency in operations should prioritize employees, aligning with the viewpoint expressed by Jakobsen et al. (2023).

The study has certain limitations; however, these limitations present opportunities for future research. We collected data at a specific point in time, employing a cross-sectional study design. This approach may raise questions about the establishment of causation between variables. We recommend that future researchers consider conducting a longitudinal study to address potential causality concerns. Additionally, our study predominantly relied on subjective opinions collected from employees through surveys. While Salman et al. (2020a) suggested that subjective assessments obtained through multi-item scales typically align with objective measures, there may still be disparities between perceptions and objective data. Future investigations could delve deeper into this aspect by incorporating objective measures. Lastly, it is worth noting that our study focused on Indonesian public service organizations, so it is advisable to exercise caution when extrapolating our findings to a broader range of sectors and global contexts.

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A Review of the Theoretical Developments and Challenges in Regional Trade Agreements

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ABSTRACT

Purpose – The core of the debate on RTAs is the economic welfare effect resulting from the provision of preferential treatment among member countries and discrimination against non-member countries, and the resulting implications for the multilateral trading system. This study aims to answer these questions by reviewing theoretical and empirical research on RTAs from an economic perspective. It also presents theoretical challenges that may reflect changes in RTAs.

Design/Methodology/Approach – This study examines the development of RTAs from an economic perspective, covering both traditional and new approaches. It does so by reviewing the literature on the theory and empirical evidence of RTAs.

Findings – Concerns that RTAs will cause trade diversion and have a negative impact on the multilateral trading system are greatly exaggerated in our study. We also find that deep integration is less discriminatory than RTAs, resulting in more favorable effects on economic welfare and the multilateral trading system.

Research Implications – Beyond the theoretical for and against RTAs, given that RTAs exist as a realistic entity, a more practical approach is to explore institutional ways in which RTAs and multilateral trading systems coexist. In other words, in a situation where the WTO system is facing a crisis, a realistic answer must be found as RTAs may be the only means to supplement the WTO system.

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I. Introduction

The number of regional trade agreements (RTAs) continues to grow, with 361 RTAs in force as of 2023, according to the WTO. More than half of these have been initiated since 2000. The proliferation of RTAs has resulted in an estimated 60 percent of world trade being conducted between members of RTAs (Limão, 2016). While RTAs have become the dominant means of trade liberalization, there are still concerns, and the debate has been renewed in the wake of the recent crisis in the WTO system due to the suspension of the WTO Appellate Body.

At the heart of the debate around RTAs is the potential for trade creation and diversion due to preferential treatment among members and discrimination against non-members, and the implications for the multilateral trading system. Trade diversion refers to the shifting of production from an efficient extra-regional supplier to an inefficient intra-regional supplier. Trade creation is the shift of production from an inefficient intra-regional supplier to an efficient intra-regional supplier. While trade creation increases economic welfare, trade diversion reduces economic welfare for both members and non-members. Whether a regional trade agreement increases economic welfare depends on trade creation and trade diversion. The theory of RTAs was developed focusing on the ambiguity of the welfare effects caused by Viner's distinction between trade creation and trade diversion.

The discriminatory nature of RTAs has broad implications for the multilateral trading system. In particular, with regard to the relationship between the proliferation of RTAs and the multilateral trading system, there are conflicting arguments that RTAs can be building blocks for the multilateral trading system, and that they can be stumbling blocks. Despite long theoretical studies on RTAs, there is no clear answer.

Meanwhile, theoretical research on RTAs has evolved along with the development of RTAs. If we categorize the development of RTAs into three phases, the first phase of RTAs focused

on economic welfare effects, the second on the relationship between RTAs and the multilateral trading system, and the third on deep integration.

First, the systemic impact of RTAs on the multilateral trading system was not an issue during the first wave of RTAs in the late 1950s and 1960s, as most RTAs formed by developing countries, with the exception of the EU, ended in failure. Moreover, since tariffs and traditional border barriers were at the core of discrimination, the theory of RTAs during this period was concerned only with the economic welfare effects of preferential tariffs.

Since the mid-1980s, RTAs have again proliferated globally during the second phase. During this period, the number of RTAs increased rapidly as the EU deepened its integration and the United States turned to regionalism. Concerns that RTAs could threaten the multilateral trading system increased, and research interest in RTAs shifted to the impact of RTAs on the multilateral trading system.

During the third phase of RTAs after the 2000s, RTAs increased the fastest, and deep integration was promoted not only for the removal of physical border barriers but also for cooperation on behind-the-border regulatory barriers such as competition, investment, government procurement, environment, and labor. These structural changes in RTAs cannot be explained by the traditional analysis of RTAs, which focuses on the concept of trade creation and trade diversion. Therefore, it is necessary to go beyond the traditional analysis to analyze the motivations and economic effects of deep integration and its impact on the multilateral trading system.

Concerns that RTAs cause trade diversion and have a negative impact on the multilateral trading system have not been clearly answered in theoretical and empirical studies. In practice, however, RTAs have become the main instrument of trade liberalization, and they also play a leading role in introducing new trade agendas instead of the multilateral trading system. In other words, RTAs are the second-best policy when the multilateral trading system fails to fulfill its role,

and in this respect, RTAs can realistically be said to complement the multilateral trading system. Of course, the debate on RTAs is still ongoing, and a cautious approach to RTAs is needed.

The theoretical and empirical literature on RTAs has been extensive, and a few studies have systematically examined the theoretical developments. Representative studies include Bhagwati et al. (1996a), Freund et al. (2010), and Lake et al. (2019). These studies are highly regarded for their systematic synthesis of theories on the economic analysis of RTAs. However, they are limited by the fact that they focus on traditional RTAs, and they do not clearly present theoretical issues that need to be improved to reflect changes in RTAs.

This paper attempts to answer these questions by reviewing the theoretical and empirical research related to RTAs from an economic perspective, and to summarize the theoretical challenges that may reflect changes in RTAs.

II. Theoretical Developments in Regional Trade Agreements

1. Traditional Welfare Effects Analysis

1.1. Vinarian Analysis

The first formal analysis of the effects of RTAs was done by Viner (1950). Before Viner, the classical argument that regional trade agreements should be encouraged was widely accepted. The essence of this argument is that while global free trade maximizes global welfare, it is difficult to achieve in practice, so RTAs should be considered a second best solution. In other words, RTAs are seen as a step towards global free trade, and although they do not maximize global welfare, they are argued to increase it.

However, Viner criticized this classic view and used the concepts of trade creation and trade diversion[1] to argue that customs unions[2] do not necessarily increase welfare. In other words, the economic welfare of a customs union depends on whether trade creation or trade diversion is greater, and only if the trade creation effect is greater than the trade diversion effect will the economic welfare of a customs union increase. The significance of Viner's analysis is that it provides concrete criterion for distinguishing between the positive and negative effects of RTAs using the concepts of trade creation and trade diversion, and provides a theoretical basis to analyze the welfare effects of RTAs.[3]

Viner's theory was later developed more precisely by Meade (1955), Lipsey (1960), and Geherels (1956). Meade argued that Viner's analysis is only valid under conditions wherein demand is inelastic and supply is perfectly elastic, and that if demand is more elastic, a customs union can actually increase trade, even if trade diversion occurs. Mead called this effect "trade expansion", and argued that if this effect is added to the trade creation and trade diversion effects, trade diversion may not be harmful.

Viner's analysis considers only changes in production patterns (production effects), and ignores changes in consumption patterns (consumption effects), assuming that consumption patterns are constant. Lipsey relaxed Viner's assumption of constant consumption patterns and showed that changes in the relative prices of

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1. Trade creation is the movement of a supply source from an inefficient supplier to an efficient supplier intra-region, while trade diversion is the movement of a supply source from the most efficient third country supplier to an inefficient supplier intra-region. Thus, trade creation improves the efficiency of resource allocation and increases economic welfare, while trade diversion worsens the efficiency of resource allocation and decreases economic welfare.
2. Since the typical form of RTAs is a customs union, the analysis of the welfare effects of RTAs is centered on customs unions, and the analysis is mainly focused on the static welfare effects of the formation of the union.
3. Viner's overall view of the customs union is somewhat negative: "Customs unions are not important, and are unlikely to yield more economic benefit than harm, unless they are between sizable countries which practice substantial protection of substantially similar industries" (Viner, 1950).

goods resulting from the formation of a customs union affect consumption through income and substitution effects, resulting in expanded trade and increased economic welfare.

Lipsey's argument is based on the second-best theory. The second best theory shows that reducing discriminatory tariffs in a regional trade agreement does not increase the welfare of member countries or the world as a whole if the discriminatory tariffs of other countries do not change. In particular, Geherels and Lipsey argued that in the case of a trade-diverting customs union, if there are consumption effects, the increase in welfare due to inter-good substitution effects[4] in consumption can offset the decrease in welfare due to trade diversion, resulting in an overall increase in economic welfare.

1.2. The Kemp-Wan Theorem

According to Viner, preferential RTAs create trade and improve the efficiency of resource allocation by removing trade barriers between member countries, but they also divert trade and reduce economic efficiency by guaranteeing preferential market access to member countries. In other words, preferential trade agreements can be positive or negative for economic welfare.

Building on Viner's insight that RTAs do not necessarily improve economic welfare, Kemp and Wan (1976) suggested a condition under which economic welfare could be increased without sacrificing non-member countries by coordinating external tariffs: if an arbitrary group of countries forms a customs union and adopts external tariffs that do not change the welfare of non-members, then RTAs can increase world welfare without sacrificing non-member countries. They argued that RTAs may not be the first-best policy to maximize world welfare, but they may be a second-best policy for achieving global free trade. From a policy perspective, the Kemp-Wan theorem

is significant because it shows for the first time that a regional trade agreement can be designed to increase the welfare of members without reducing the welfare of non-members.

For Kemp and Wan's argument to hold, there must be a principle of compensation between members of the customs union, but they do not specify how such compensation should be achieved. Grinols (1981) showed that welfare can be enhanced by the formation of a customs union by presenting a possible principle of compensation between members of a customs union.

Panagariya and Krishna (2003) extended the Kemp and Wan theorem to FTAs, and reached the same conclusion. They argued that by setting rules of origin that prevent trade deflection from low tariff countries to high tariff countries within the FTA, FTAs can be designed to increase the economic welfare of members without causing economic losses to non-members. Mrazova (2010) extended the Kemp and Wan theorem to imperfectly competitive markets, and that the decrease in competition among oligopoly firms reduced the possibility of trade diversion, making it easier to satisfy the Kemp and Wan theorem.

However, Krugman (1991) deduced that external tariffs in customs unions are higher than before a union, given the increased market power. Therefore, he argued that customs unions always result in trade diversion, which reduces the welfare of non-member countries and reduces the welfare of the world as a whole. As DeRosa (1999) pointed out, coordinating external tariffs and establishing the principle of compensation among member countries is not an easy task, so the problem ultimately boils down to political economy. The Kemp and Wan theorem overlooks this point.

1.3. Natural Trading Partner Hypothesis

Since RTAs tend to be formed between neighboring countries with high trade volumes, it

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4. According to Lipsey (1960), supply source substitution, such as trade creation and diversion, refers to cross-country substitution, wherein the source of a commodity is shifted from one country to another, while inter-commodity substitution refers to the shift in consumption from one commodity to another due to changes in relative prices.

has been argued that RTAs between natural trading partners reduce the likelihood of trade diversion and increase the likelihood of trade creation, thereby increasing welfare. Representative studies include Wonnacott and Lutz (1989), Summers (1991), Krugman (1991), and Frankel et al. (1995), and they argued that economic welfare would improve if RTAs were formed between "natural trading partners". "Natural trading partners" are defined as countries that initially have high trade volumes and are geographically close. The idea is that if there is initially a high volume of trade between members, a regional trade agreement will increase economic welfare because trade creation exceeds trade diversion, and if members are geographically close, a regional trade agreement will reduce transportation costs, and thus increase economic welfare.[5]

However, Bhagwati and Panagariya (1996) argued that if initial trade volumes are high, trade diversion may actually exceed trade creation due to the redistribution of tariff revenues among member countries, and numerous empirical studies have shown that trade diversion cannot be ignored. Moreover, high initial trade volumes may not be a natural outcome, but rather a result of preferential treatment, as seen in the case of the United States and Mexico. Bhagwati and Panagariya also criticized arguments in favor of RTAs between geographically close countries, arguing that it was more economically beneficial to form agreements between geographically distant countries than those geographically close.

1.4. A Political Economy Approach to RTAs

While RTAs are generally driven by economic motivations, participation in a regional trade agreement is an inherently political decision, and different types of RTAs can often be pursued depending on the goals of the government. If a government is simply interested in the welfare of its own citizens, it may pursue trade-creating RTAs to generate trade and improve economic welfare. However, governments may be influenced by other motives, especially if they are influenced by special interest groups, and a trade-diverting regional trade agreement may be pursued.

Grossman and Helpman (1995) and Krishna (1998) showed that trade-diverting inefficient RTAs could be promoted from a political economy perspective, where trade policy is determined through lobbying among interest groups. They showed that trade-creating RTAs face strong opposition from import-competing industries, and while trade diversion from non-member countries to member countries is less desirable in terms of social welfare, it creates additional gains for producers in partner member countries at the expense of producers in the home country. Therefore, trade-diverting RTAs are more likely to be promoted than trade-creating RTAs in a political environment. While Gross and Helpman assumed that markets are perfectly competitive, Krishna analyzed the potential for trade-diverting RTAs under the assumption of imperfect competition, wherein a small number of firms dominate the market.

If trade diversion is the motivation for RTAs, as Grossman, Helpman, and Krishna argued, then the implications for the world trading system are very negative; the proliferation of trade diverting RTAs reduces domestic incentives for multilateral trade liberalization, and the greater the trade diversion, the greater the likelihood. As a result, these RTAs act as an impediment to multilateral trade liberalization.

On the other hand, according to Baldwin's (1993) domino theory, the existence of non-member interest groups excluded from RTAs increases the pressure to join new RTAs, resulting in a domino effect of cascading accession to RTAs. Baldwin argued that the proliferation of RTAs is due to non-member states competitively pursuing

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5. The impact of transportation infrastructure on trade has been analyzed by Limao and Venables (2001) as well as others. They found that trade increases significantly in countries with well-developed transportation infrastructure, while trade decreases in countries with low levels of transportation infrastructure (Lee, 2022).

RTAs to avoid being disadvantaged by trade and investment diversion.

1.5. External Tariffs in RTAs: Endogenous External Tariffs

Viner's insight that RTAs generate both trade creation and trade diversion is based on the assumption that external tariffs on non-members are exogenous. However, if external tariffs against non-members are endogenous variables that can be adjusted, they can affect trade creation and trade diversion, and the welfare effects of RTAs may be different.

Kennan and Riezman (1990) first used general equilibrium analysis to analyze the setting of external tariffs to maximize the welfare of RTAs. They estimated the effect of governments forming an FTA unilaterally, and then moving to a customs union with a common external tariff. They found that equilibrium external tariffs are higher in customs unions than in FTAs. This is because a customs union first creates a larger market, which increases a country's market power, and increases the incentive for tariff revenue. Second, through policy coordination, members of a customs union can internalize the externalities of their individual trade policies with respect to each other.

Krugman (1991) argued that as customs unions symmetrically expand in size and decrease in number, the world market is divided into three blocks. As a result, the optimal tariff of each block rises, and world welfare decreases as the market power of the customs union increases. Bond and Syropoulos (1996) pointed out that in a symmetric world, whether a larger bloc has more market power and higher tariffs depends on the pattern of endowments and the elasticity of substitution. According to their research, the optimal tariff may increase or decrease as the number of customs unions decreases.

While customs unions tend to impose higher common external tariffs in order to obtain higher preferential margins, FTAs tend to impose lower external tariffs than customs unions because member countries independently determine their foreign trade policies (Fruend and Ornelas, 2010). In other words, in FTAs, there are no market power or coordination effects because governments pursue foreign trade policies independently, but different incentives to re-optimize tariffs emerge.

Richardson (1993) pointed out that in the case of FTAs, external tariffs tend to fall after the signing of an FTA in order to minimize trade diversion from non-member countries to member countries. Bagwell and Staiger (1999) argued that the reason for lower external tariffs in FTAs is due to the "tariff complementarity effect".

The political and economic incentives to pursue FTAs also play a role in reducing external tariffs. Grossman and Helpman (1995) showed that external tariffs can be lowered after an FTA from the perspective of consumer and producer welfare. If political economy motivation is at play, external tariffs tend to fall after an FTA because domestic producers have less incentive to protect products due to free market access, while consumers are less well off due to protection. The stronger these political and economic incentives, the greater the decline in external tariffs.

In contrast, Panagariya and Findlay (1996) argued that if labor lobbying is present, higher tariffs may be imposed on imports from non-member countries to prevent wage reductions due to FTAs.

Limão (2007) showed that RTAs can induce higher tariffs on non-member countries if they are driven by non-economic objectives, such as drugs or labor standards. He argued that there was an incentive to keep external tariffs high because lower external tariffs could erode preferences and induce participating countries to withdraw non-trade concessions.

2. RTAs and Multilateral Trading Systems

As multilateralism and regionalism coexisted since the the establishment of the WTO, economist attention has shifted from traditional Vinerian welfare analysis to the systematic effects of RTAs on the multilateral trading system; apart from the

welfare effects of RTAs, the focus has been on whether RTAs are competitive or complementary to the multilateral trading system. Specifcially, in recent years, with the WTO system in crisis, whether RTAs can replace the WTO or be a useful alternative to compensate for the WTO's shortcomings has become an important concern.

In this section, we summarize the relationship between RTAs and the multilateral trading system by distinguishing between the impact of RTAs on multilateral trade liberalization, and the impact of multilateral trade liberalization on RTAs.[6]

2.1. The Impact of RTAs on Multilateral Trade Liberalization

Bhagwati (1999) systematically explained the impact of RTAs on the multilateral trading system through dynamic time-path analysis. According to Bhagwati, global welfare is maximized if RTAs work to integrate the world economy by steadily increasing the number of members. However, if regionalism works to fragment the world economy by stagnating the number of members, global welfare is reduced. In reality, it is difficult to expand blocs by continuously increasing the number of members, so RTAs may act as an obstacle to multilateral trade liberalization.

Levy (1997) argued that RTAs undermine political support for multilateral trade liberalization using a political economy model in which decisions are made by majority voting. Krishna (1998) used an oligopolistic model to reach conclusions similar to Levy's. In particular, he argued that the greater the economic gains to local firms from trade diversion, the less incentive they have to liberalize trade with third countries, and that RTAs are likely to be an obstacle to global trade liberalization.

Moving away from a political economy perspective and focusing on the role of bargaining costs and sectoral sunk costs, McLaren (2002) argued that RTAs could be harmful to multilateral trade liberalization. This is because RTAs induce private firms in each member country to invest in the region, and the sunk costs of such investment cause firms to oppose multilateral trade liberalization.[7]

Some researchers have argued that non-economic objectives may cause member states to oppose further multilateral trade liberalization. According to Limão (2007), preferential tariffs in RTAs can be used as bargaining chips to induce partner countries to cooperate on non-economic issues. This is because the prospect of losing the opportunity through multilateral trade liberalization reduces incentives to engage in multilateral trade liberalization. In particular, he argued that the greater the economic gains to local firms from trade diversion, the less incentive they have to liberalize trade with third countries, and that RTAs are likely to be an obstacle to global trade liberalization.

Finally, opposition to multilateral trade liberalization can come from countries excluded from RTAs. According to Ornelas (2005), RTAs give non-members easier access to member markets without having to lower their own tariffs. This free ride can lead non-members to oppose multilateral trade liberalization that they would have supported in the absence of a regional trade agreement.

Contrary to the negative assessment of RTAs, there are arguments that RTAs are beneficial for multilateral trade liberalization. Summers (1991) argued that in multilateral negotiations, negotiations can proceed more quickly if the number of negotiators is reduced through bloc formation. This argument is based on the fact that

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6. Bhagwati et al. (1996b) analyzed the impact of regionalism on multilateralism in two separate ways. The first approach assumes that regionalism and multilateralism are strangers with no mutual influence, and analyzes whether the dynamic time path of regionalism creates building blocks or stumbling blocks for global trade liberalization through membership growth or stagnation. The second approach assumes that regionalism and multilateralism are mutually influential, and analyzes whether regionalism is a friend or foe of multilateral trade liberalization.

7. McLaren (2002) refered to the blocking of RTAs due to the irreversible economic activities of private firms as "insidious regionalism".

multilateral trade negotiations are slow or difficult because of the large number of participants and free riding. Bergstern (1996) also argued that RTAs can facilitate multilateral negotiations by posing a threat to countries that are passive in the multilateral negotiating process. Indeed, if the EU was passive in the Uruguay Round negotiations, Bergstern argued, the United States induced the EU to become more active in the negotiations by threatening to form an FTA with Asian countries.

Baldwin (1993) showed that RTAs can be a means of achieving global free trade through the "domino effect". According to Baldwin, from an initial equilibrium in which the economic benefits and economic costs of the last member state are matched, an external shock, such as the formation of the European single market, increases the likelihood of realizing benefits within the alliance, and the resulting regional trade agreement provides an incentive for non-members to join. Moreover, once a non-member country joins, it induces other non-members that do not want to be at a relative disadvantage to join, and thus the expansion of the bloc creates a domino chain . Eventually, the entry of a country into a trade bloc due to an exogenous shock will induce other countries to join, resulting in a global expansion of the trade bloc, and global welfare will be maximized through RTAs.

2.2. The Impact of Multilateral Trade Liberalization on RTAs

Multilateral trade liberalization can affect RTAs, and Freund (1998) and Ethier (1998) argued that multilateral trade liberalization is itself a cause of the proliferation of RTAs. In particular, Ethier argued that RTAs do not pose a threat to multilateral trade liberalization, but rather that the success of multilateral trade liberalization in the past has been a factor in the proliferation of RTAs, and thus RTAs are persistent. In other words, Ethier explained the relationship between regionalism and multilateralism. First, the proliferation of RTAs is due to the success of multilateral trade liberalization in the past; second, RTAs are a means for small countries

to participate in the multilateral trading system; and third, RTAs create new industrial groups that are interested in free trade. Therefore, RTAs, especially between developed and developing countries, are the result of the favorable reaction of developing countries to multilateral liberalization in developed countries, and in this sense, RTAs can coexist with multilateral trade liberalization.

Freund argued that lower multilateral tariffs create incentives for RTAs, and that the current proliferation of RTAs is a result of the significant reduction in MFN tariffs that has occurred as a result of multilateral tariff reduction negotiations. Baldwin (2006) argued that trade liberalization through RTAs and multilateral trade liberalization have a complementary effect, acting as a force for broader trade liberalization. In other words, when tariffs are lowered through reciprocal tariff liberalization, export industries expand and import competing industries contract, reducing the pressure for protection, and this change in industry structure is a factor that promotes future trade liberalization.

3. Empirical Evidence

3.1. Empirical Evidence of Welfare Effects

The welfare effects of RTAs are ultimately an empirical question. Most empirical literature suggests that RTAs are trade-creating, with positive welfare effects for member countries and very small negative welfare effects for non-member countries.

Although theoretical studies on RTAs have been conducted since Viner, empirical studies on the economic welfare effects of RTAs have been conducted in earnest since the late 1980s, especially after the launch of NAFTA.

Clausing (2001) found evidence that the Canada-United States Free Trade Agreement (CUSFTA) increased U.S. imports from Canada, but did not convert U.S. imports from other U.S. trading partners. Treffler (2004) concluded from the CUSFTA study that trade creation exceeds trade diversion. In contrast, Romalis (2007)

examined the welfare effects of NAFTA using EU trade changes as a criterion for the counterfactual.[8] He found that the welfare effect of NAFTA was smaller than expected.

Magee (2008) used a gravity model to examine the effects of RTAs on trade flows using data for 133 countries over the period 1980-1988. The results showed that the impact of RTAs on trade flows was insignificant, averaging 3%, and that trade creation exceeded trade diversion. In contrast, Carrere (2006) argued in a gravity model survey of 130 countries from 1986-1996 that the increase in trade among members in RTAs came at the expense of trade with non-members, which is evidence of strong trade diversion.

Chang and Winters (2002) examined the welfare effects of MERCOSUR through its impact on Brazilian export prices. They found that Argentina's export prices increased, but non-member export prices decreased. This price effect suggests that the formation of MERCOSUR favors members, but disadvantages non-members.

Finally, Baier and Bergstrand (2007) estimated trade creation effects by explicitly accounting for endogeneity. They argued that the endogeneity of RTAs was very important, and that the positive effect on bilateral trade flows was statistically stronger and five times larger than estimates that ignore endogeneity. In particular, they predicted that trade between member states would double in the 10 years following the signing of the FTA. Acharya et al. (2011) found trade creation in most RTAs, and no evidence of trade diversion. In particular, they estimated that RTAs not only increase trade among member countries but also increase trade with non-member countries. This strongly suggests that RTAs increase both intra-regional and extra-regional trade.

Wonnacott and Lutz, Summers, Krugman, and others used the natural trading partner hypothesis to argue that RTAs would improve economic welfare when formed among geographically close countries with frequent trade. Frankel et al. (1995) examined the effect of RTAs on trade flows by testing whether regional trade could be explained by natural determinants of trade, such as proximity and market size.[9] They found that trade liberalization through RTAs between close countries within a continent increased welfare and was preferable to free trade agreements covering a single continent. In other words, RTAs between natural trading partners, such as NAFTA and MERCOSUR, were preferable to the failed Free Trade Area of the Americas (FTAA). Baier and Bergstrand (2004) also used a CGE model to present results supporting the natural trading partner hypothesis.

However, Krishna (2003) used a CGE model to test the natural trading partner hypothesis and found that neither geographic location nor trade volume was significantly correlated with welfare gains. He argued that this suggested that the natural trading partner hypothesis was not a good indicator of welfare effects.

3.2. Empirical Evidence of Multilateral Trade Liberalization

Theoretical literature on whether RTAs help or hinder multilateral trade liberalization is unclear. It comes down to an empirical question, but the empirical evidence on this issue is also unclear. Empirical investigations of the relationship between RTAs and multilateral trade liberalization have been conducted in two ways. The first tests whether MFN tariffs and preferential tariffs are complementary or substitutive. Estevadeordal et al. (2008) examined the impact of preferential tariffs on external trade liberalization for 10 Latin American countries. They found that FTA preferences induced a rapid decline in external tariffs, but that preferential liberalization was not

8. In order to estimate the welfare effects of a regional trade agreement, we need information on the counter factual: "What would have happened in the absence of a regional trade agreement?" In general, the counter factual is not known, so the analysis is based on assumptions.
9. Frankel et al. analyzed the trade creation effects of RTAs with GNP, GNP per capita, distance between countries, and language as explanatory variables (Yoon, 2022).

associated with changes in external tariffs in the Latin American Customs Union.

In contrast, Limão (2006) found that MFN tariff cuts were smaller for products subject to trade preferences, suggesting that RTAs might actually hinder multilateral trade liberalization. Karacaovali and Limão (2008) also reached a similar conclusion in a study of the EU.

The second approach is examines the relationship between regional trade agreement formation and multilateralism. A frequently cited example of how regionalism has facilitated multilateral trade liberalization is the shift in U.S. trade policy toward regionalism in the 1990s; the shift from advocating multilateralism to regionalism in the 1990s facilitated the Uruguay Round negotiations (Bergsten and Schott, 1997). Mansfield and Reinhardt (2003) found that more RTAs were formed during multilateral trade negotiations, and interpreted this as evidence that multilateralism promoted RTAs as a means of gaining bargaining leverage.

In summary, theoretical studies on the impact of RTAs on multilateral trade liberalization have provided some important insights, but no definitive conclusions have yet been reached. Empirical research has also been limited to correlations and case studies, with no clear conclusions.

III. New Approaches and Theoretical Challenges to RTAs

1. Paradigm Shift and Deep Integration of RTAs

According to traditional theory, the key to differentiation in RTAs is differentiation by physical border barriers, such as tariffs and other

trade barriers. This is why most traditional theories of RTAs are based on the elimination of physical border barriers. However, as a result of multilateral trade negotiations, tariffs and other physical border barriers have been significantly reduced, making them less relevant as a trade policy instrument. Therefore, the proliferation of RTAs since the 2000s cannot be explained by traditional analyses (Cheong, 2023).

The changes in RTAs since the 2000s have been linked to structural changes in international trade. In the past, production processes were not fragmented internationally, and all production was carried out within a country. On this basis, traditional trade, in which the division of labor between countries took place, dominated. In this traditional trade environment, physical border barriers, such as tariffs, are the most important factor determining competitiveness in terms of costs. This is why traditional RTAs aim to eliminate physical border barriers.

However, in the 21st century, the international fragmentation of production processes has led to the establishment of the most efficient global supply chain, which determines the competitiveness of firms. In such a trade environment, behind-the-border regulations can act as a barrier to the establishment of efficient global value chains (GVCs)[10] (Laget et al., 2018). Therefore, cooperation on behind-the-border barriers has become a crucial issue to promote efficient GVCs and 21st century trade based.[11]

Shallow integration only aims at removing physical border barriers such as tariffs and non-tariff barriers, and deep integration aims at introducing new WTO-X trade norms such as competition, investment, labor, and the environment (Lawrence, 1996). In the traditional pattern of international trade in the 20th century, shallow integration aimed at eliminating physical

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10. The WTO defines global value chains as "a new paradigm in which the production of goods and services is fragmented into multiple stages, with each stage of production taking place in the country where it is most cost competitive, rather than in any one country, so that optimal value is created for each production process" (WTO, 2019).

11. Baldwin (2011) argued that 21st century RTAs were being promoted to fill the gap between 20th century trade norms and 21st century trade norms due to changes in the structure of international trade.

border barriers was promoted because trade barriers such as tariffs were the most important determinant of competitiveness in terms of comparative advantage. However, with the structural transformation of international trade from traditional trade to GVC trade in the 21st century, deep integration has been promoted to coordinate and converge heterogeneous regulations beyond tariff cooperation.

2. Theoretical Developments in Deep Integration

Traditional RTAs aim to reduce physical border barriers such as tariffs, and can therefore be explained by traditional Viner analysis. However, recent RTAs, represented by the 21c RTAs, are much more complex as they involve the removal of border barriers as well as the institutional harmonization of behind-the-border regulations. Therefore, a Vinerian analysis based on tariff preferences has limitations, and additional analysis is needed to determine the effect of the liberalization of behind-the-border barriers.

Theoretical studies on deep integration have focused on investigating the depth and flexibility of deep integration, the economic effects of deep integration, and the relationship between deep integration and GVCs.

2.1. Deep Integration Classification by Policy Area

To fully analyze the causes and effects of deep integration, it is necessary to be able to quantify the provisions of deep integration by policy area so that the depth and breadth of integration can be measured. Data sets to measure the depth and breadth of deep integration are only recently being developed and built.

The first database on deep integration was developed by Horn et al. (2010). They used the Are-Covered Index (AC) and the Legally-Enforceable Index (LE) to assess the coverage and legal enforceability of each policy area in RTAs. They also categorized the deep integration provisions in RTAs signed by the United States and European countries into WTO+ and WTO-X provisions by policy area.

Limao (2016) argued that WTO+ and WTO-X provisions should be subdivided and reclassified in terms of the depth and breadth of deep integration. Hofmann et al. (2017) extended the dataset presented by Horn et al. to provide information on the depth of deep integration by dividing it into 14 WTO+ areas and 38 WTO-X areas. While Hofmann et al.'s dataset measures the horizontal depth of deep integration, the dataset recently developed by Mattoo et al. (2020) measures the vertical depth.

2.2. Economic Effects of Deep Integration

Most theoretical studies of RTAs analyze the economic effects of preferential tariffs under the premise of shallow integration. This analysis results in Vinerian analysis, which focuses on trade creation and trade diversion. Is Vinerian analysis of the welfare effects of RTAs applicable to deep integration? Does deep integration lead to more trade creation or trade diversion than shallow integration? The Vinerian view is not directly applicable to deep integration. The reason is that the nature of deep integration is in part different from shallow integration. Shallow integration is inherently discriminatory, which leads to ambiguous conclusions like the Vinerian analysis. According to Mattoo et al. (2022), shallow integration is inherently discriminatory, but deep integration is less discriminatory. Deep integration can reduce trade costs between member countries by eliminating tariffs and reducing other frictions through deep provisions. Therefore, deep integration is more likely to lead to trade creation than shallow integration.

The rules of deep integration do generate cost-saving benefits for member states as well as for non-member states. Of course, if these rules are implemented in a discriminatory manner, non-members are further disadvantaged. However, some deep integration provisions are of such a broad regulatory nature that they are essentially applicable to all countries. For example, barriers to

trade in services are strongly in the nature of cross-border regulatory measures, and some barriers to services are removed or relaxed as a result of deep integration, effectively extending the application to non-members. The non-discriminatory nature of these behind-the-border regulatory barriers means that deep integration allows non-members to benefit from the cost savings, and therefore deep integration reduces the likelihood of trade diversion compared to shallow integration.

Using a gravity model, Mattoo et al. (2022) found that trade between member states increased by about 44 percent after deep integration, and that this strong trade creation did not come at the expense of trade diversion with non-member states. Rather, they found that trade with non-members increased by about 19 per cent. This negative trade diversion effect of deep integration is attributed to the inclusion of non-discriminatory provisions in the agreement, such as regulatory provisions on competition policy, subsidies, and standards (Baldwin, 2014).

So far, the debate on whether RTAs help or hinder the multilateral trading system has largely been based on tariff liberalization, but it needs to be extended to deeper integration, which includes cooperation on behind-the-border regulations.

According to Lejárraga (2014), if the deep integration provisions contained in a regional trade agreement are widely spread across RTAs, deep provisions can be multilateralized, and in this respect, deep integration can be a "stepping stone" toward a multilateral trading system. In other words, RTAs can serve as laboratories for proactive learning about deep provisions, such as behind-the-border regulation.

Baldwin (2008) explained the domino effect of the widespread adoption of deep integration provisions in Europe. He argued that EFTA's adoption of similar provisions in imitation of EU competition policy provisions was intended to ensure that EFTA firms were not disadvantaged relative to EU firms, and that this domino effect of deep integration could be seen in other regions.

Mattoo et al. (2017) argued that some deep provisions, such as those on the environment

and labor, could complement the multilateral trading system in that they were international public goods. In other words, under the current WTO system, negotiations to introduce such deep integration provisions can no longer be expected, and RTAs can act as a substitute for the WTO in providing international public goods. In this respect, it is argued that deep integration is complementary to the multilateral trading system.

2.3. Deep Integration and GVCs

Traditional international trade refers to the division of labor between countries for final goods that are produced entirely within a single country. In the 21st century, however, global value chains (GVCs) are expanding, with the division of labor and specialization taking place across borders, and production processes being fragmented to reduce costs and optimize value at each stage of production. In the process, trade between countries involved in GVCs for raw materials, components, and intermediate goods has become intensive. This is known as GVC trade (OECD, 2013).

The relationship between deep integration and international production processes was first raised by Lawrence (1996). He was the first to use the concept of deep integration, and argued that the development of regional production systems and the promotion of investment in services led to the demand for deep integration. In other words, it was argued that in order to promote international investment and production by global firms, deep integration was necessary to eliminate differences in production and product standards across countries that imposed costs on integrated production.

According to Baldwin (2011), trade in the 21st century is much more complex. This complexity stems from the fragmentation of production stages across borders due to the increasing role of international production networks. To reduce costs and gain comparative advantage, global firms decentralize production and separate and outsource service activities such as office work. This makes global production networks more sophisticated and complex.

The relationship between deep integration and GVCs has been extensively analyzed by Ruta (2017). According to Ruta, deep integration facilitates the creation of GVCs. This is because deep integration internalizes the externalities of cross-border policies, lowers trade costs, and provides common rules for behind-the-border barriers that facilitate cross-border economic activity. Conversely, it is argued that GVCs change the political and economic environment of trade policy, discouraging protectionism and stimulating demand for deeper integration.

However, Ruta argued that it could not be assumed that the current relationship between deep integration and GVCs would continue into the future. Since GVCs are the result of endogenous investment decisions based on firm expectations of future trade policies, if firms anticipate changes in future trade policies, they may reshore production processes. If this happens, they argued, deep integration, which implies cooperation on behind-the-border regulation, may be undermined.

3. Theoretical Challenges of RTAs

Concerns that RTAs cause trade diversion and threaten the multilateral trade system are not clear in both theoretical and empirical analysis. These results are due to the dual nature of RTAs, but there is also a problem in that the theoretical and empirical methods of analysis do not reflect changes in RTAs. In practical terms, the challenges that need to be addressed for a complete analysis of RTAs are summarized below.

First, theoretical studies on RTAs have been divided into economic, political, and legal approaches. The economic approach focuses on the economic rationale of RTAs and their welfare effects through trade. The political approach emphasizes the motivation of RTAs by political factors and the importance of political factors in the negotiation of RTAs. The political approach has a shorter history than the economic approach, but empirical studies on RTAs dominate the field of economics. The legal approach focuses on the compatibility of RTAs with WTO norms from a legal perspective. This helps to analyze the enforcement and implementation of commitments, and the impact of RTAs on domestic law.

In practice, RTAs are influenced by both economic and political factors, and may face national or international legal issues in operation. In this respect, research on the phenomenon of RTAs must be comprehensive, taking into account economic, political, and legal aspects. In view of this, future research on RTAs should be conducted in a multidisciplinary manner, involving economics, political science, and law.

Second, despite the theoretical developments on RTAs, we have not been able to obtain clear answers on the economic welfare effects of RTAs and the impact on the multilateral trading system. This may be due to the duality of the discriminatory nature of RTAs, wherein the preferential treatment of members and discrimination against non-members inevitably leads to the dual outcomes of free trade (trade creation) and protectionism (trade diversion). Perhaps this problem will remain unanswered, regardless of the development of regional trade agreement theory.

The proliferation of RTAs is here to stay, and is irreversible. At a policy level, it may be pointless to theoretically analyze whether RTAs help or hinder the multilateral trading system. Rather, it is more realistic to acknowledge the fact that RTAs have become the dominant instrument of trade liberalization, and work on institutional arrangements to ensure that they are conducive to the multilateral trading system.

Third, although this paper has examined deep integration theory as a new approach to RTAs, deep integration theory is still in its infancy, and many issues remain to be resolved. In particular, the specific channels through which deep integration affects trade flows in GVCs need to be identified. Deep integration affects the ability of global firms to produce products in fragmented industries and participate in GVCs. Therefore, at the firm level, it is necessary to analyze specifically how deep integration affects the production processes of global firms and the resulting trade

flows. In this respect, while traditional analyzes have been based on macro-level analysis, deep integration requires a micro-level analysis.

In addition, the content of deep integration is diverse and extensive, and its impact varies greatly depending on the details of the agreement. Therefore, it is very important to classify and investigate the content of deep integration in detail, and relevant statistics that can measure the depth and breadth of deep integration should be refined. The policy areas and instruments covered in deep integration are very broad and complex, making them very difficult to quantify and aggregate. There is some work being done by the World Bank to categorize deep integration provisions by policy area, but it is based on outward policy content. Therefore, rather than simply assessing the extent of integration based on the share of deep integration provisions included in an integration, an assessment methodology should be developed that captures the actual depth of integration, such as legal enforceability.

Fourth, statistical analysis is a prerequisite for analyzing changes in RTAs, but statistics on RTAs currently published by the WTO are limited in terms of both quantity and quality. Therefore, it is necessary to aggregate statistics by further disaggregating them by type based on WTO statistics, and it is also necessary to establish a method of compiling statistics by setting criteria for RTAs by content.

It is also necessary to reorganize the criteria and terms for classifying RTAs. While the choice of terminology and classification should reflect the paradigm shift in RTAs that has occurred since the 2000s, the WTO's current classification methods and terminology do not reflect this. In particular, the classification of RTAs used by the WTO differs from the traditional classification model, the Balassa standard, adding to the confusion.

IV. Conclusion

This paper attempts to determine whether the proliferation of RTAs is a blessing or nightmare for the global economy through theoretical and empirical investigations of RTAs. The proliferation of RTAs has continued, and they are becoming the dominant trend in trade liberalization. Concerns over market distortions due to the discriminatory nature of RTAs also persist.

This paper reviews the theoretical and empirical research on RTAs from two perspectives: the economic welfare effects, and the impact on the multilateral trading system. In terms of welfare effects, the theoretical trend of Viner's ambiguity has been maintained, but in terms of empirical results, the potential for trade creation seems to outweigh the concern of trade diversion. The impact of RTAs on the multilateral trading system is both theoretically and empirically uncertain. It is difficult to explain this clearly with the currently developed regional trade agreement theory or empirical analysis method.

Recent RTAs have been promoted in the form of deep integration, which goes beyond the removal of border barriers and aims to harmonize behind-the-border barriers. How do the economic benefits of deep integration and the impact on the multilateral trading system differ from traditional analyses? Deep integration is assumed to be less differentiated than traditional RTAs, leading to more trade among members and less trade diversion from non-members. As the development of the theory of deep integration is still in its infancy, this claim of less discriminatory behind-the-border regulatory barriers requires further scrutiny. It has also been argued that deep integration is beneficial to the multilateral trading system in terms of pioneering the adoption of deep regulations through RTAs and the provision of international public goods on behalf of the WTO, but this is controversial.

In summary, initial fears that RTAs cause trade diversion and undermine the multilateral trading system have been greatly exaggerated. While it is true that the proliferation of RTAs does cause some trade diversion, it does not undermine the multilateral trading system. In theory, the proliferation of RTAs may reduce the incentives for some countries to liberalize multilateral trade,

but this does not pose a systemic threat to WTO governance.

Apart from the theoretical arguments for and against RTAs, RTAs exist as realistic entities, and there is no reversing this trend. In light of this, a more pragmatic approach is to study the institutional options for the coexistence of RTAs and the multilateral trading system. In other words, most ideal is the restoration of the multilateral trade system represented by the WTO, but a realistic answer should be found in that RTAs can be the only means to complement the WTO, as it is facing a crisis.

Due to spatial constraints, this paper does not examine non-economic factors such as security and geography, which have become increasingly important in recent years. In addition, this study focuses on the static welfare effects of RTAs, whereas the motivation for RTAs is more likely to be found in the long-term dynamic effects. This is a limitation of this paper, and further research is needed in this area.

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Green Innovation, Environmental Certification, and the Sustainable Development of Enterprises in China*

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ABSTRACT

Purpose – Achieving sustainable development has always been the most important issue for enterprises. Owing to global warming and environmental deterioration, environmental management is increasingly becoming a major concern for enterprises and the external world, especially stakeholder behavior. This study explores whether enterprise environmental management can contribute to its sustainable development, and how stakeholder behaviors can influence this relationship.

Design/Methodology/Approach – This study uses a fixed effects regression model to empirically test the data of Chinese A-share listed companies from 2012 to 2020, and investigates the impact of corporate environmental behavior (i.e. green innovation and environmental certification) on the sustainable development of enterprises. It also explores the moderating role of government support and analyst attention in the impact of environmental management on corporate sustainability.

Findings – The research results showed that enterprise environmental management, namely, green innovation and environmental protection certification, can promote sustainable development capabilities. Simultaneously, government support and proper attention from analysts can have a positive moderating effect on green environmental management and improve sustainable development.

Research Implications – This study enriches relevant theories on enterprise environmental management and sustainable development, proposes the importance of government support and external institutional supervision, and provides a reference for sustainably developing enterprises from the perspective of stakeholder behaviors.

Keywords: analyst attention, environmental protection certification, government support, green innovation, sustainable development
JEL Classifications: G30, G34, G38

I. Introduction

In recent years, environmental issues have become increasingly prominent and have gained attention worldwide. This trend has been accelerating as the world rethinks issues such as the curbing of greenhouse gases, waste generation, water pollution, and resource scarcity (Khan et al., 2022). The United Nations and countries around the world have also actively begun to respond to global environmental issues in various ways while exploring sustainable development paths. Several forms of global action, including the Paris Agreement and the United Nations 2030 Agenda for Sustainable Development, have been implemented (Iacobut et al., 2022).

In the case of China, in September of 2020, the country proposed two goals: a "carbon peak" to be achieved in 2030, and "carbon neutrality" to be achieved in 2060. Furthermore, enterprise green development and enviromental management received widespread attention (Yao et al., 2021). Enterprise improvement of environmental capabilities can help obtain certain competitive advantages (e.g., cost reduction and differentiation) through the implementation of active environmental strategies (Baik et al., 2022; Malik & Okere, 2020; Poornima & Manmohan, 2021). This positively and directly impacts environmental performance (Tulin & Eva, 2020).

Regarding enterprise environmental capabilities, we must first consider the role of green innovation. Green innovation can have an important impact on environmental sustainability, and has proven to be an effective tool to reduce environmental pollution (Nabila et al., 2022). Simultaneously, green innovation can positively and significantly impact economic and environmental performance. Companies that pay greater attention to environmental management show favorable relationships between green innovation and environmental performance (Bambang et al., 2020; Saudi et al., 2019). Economic and institutional pressures often drive green innovation, which can create value in terms of social sustainability (Liu

et al., 2021; Saunila et al., 2018). Simultaneously, green innovation can have a significant positive impact on any given company's financial performance; that is, higher green innovation performance can help increase profitability and lower financial risk (Tariq et al., 2019). Therefore, green innovation can positively affect an enterprise's future development.

The ISO 14001 environmental management system certification also reflects the strength of a given enterprise's environmental capabilities, and positively affects the enterprise's sustainable development. Companies using this certification standard can improve operational efficiency by better utilizing resources and waste management systems (Camilleri, 2022). Adopting ISO 14001 can help reduce enterprise carbon emission intensity and improve profitability. ISO 14001 has a greater impact on the profitability of companies from high environmental awareness (EAS) countries (Arocena, et al., 2021). ISO 14001 supports the green growth process (Abid et al., 2022) and contributes to sustainable development (Ferreira et al., 2019; Oyelakin & Satirenjit, 2021).

Stakeholders can strongly influence enterprise development. In recent years, an increasing number of stakeholders have begun to pay attention to and influence enterprise enviromental management. Stakeholder pressure is one way to drive companies to adopt environmental management practices, and studies have shown that it positively impacts corporate resource management and energy efficiency (Lai & Zhu, 2021; Mungai et al., 2022). Stakeholders can also significantly impact resource usage and waste reduction; thus, strengthening the relationship between enterprises and stakeholders will improve enterprise performance (Hamzah & Abdullah, 2018; Salem et al., 2018). Data from the UK manufacturing industry has shown that stakeholder pressure directly increases the use of environmental management control systems, which in turn indirectly affects economic and environmental performance (Abdel-Maksoud et al., 2021). Stakeholders play an important role

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in cultivating the SME sense of environmental responsibility, and simultaneously can significantly impact innovation in corporate sustainability (Veronica et al., 2020).

Therefore, this study combined theoretical and empirical analysis to analyze the relationship between corporate enviromental management and sustainable development, and explored whether stakeholders can influence the relationship between corporate enviromental management and corporate sustainable development. Accordingly, our research has analyzed corporate enviromental management using two perspectives: green innovation and environmental certification. This study aims to enrich relevant theories regarding corporate environmental management and sustainable development, promotes the importance of government support and external supervision systems, and provides a reference for corporate sustainable development from the perspective of stakeholder behaviors.

II. Literature Review and Hypotheses

1. The Impact of Corporate Green Innovation on Sustainable Development

The term "green innovation" refers to improvements in corporate hardware or software related to green products or processes (e.g., new technologies for energy conservation, pollution prevention, waste recycling, green product design) and developments in corporate environmental management practices that promote sustainable development (Chen et al., 2006). Green innovation encompasses the ingenious creation of green products or processes intended to improve an organization's environmental performance, or to meet environmental protection requirements (Chen et al., 2006).

As the country with the largest global carbon emissions, China has attempted to coordinate the relationship between environmental protection

and economic development by introducing policies encouraging green innovation and issuing green bonds (Tolliver et al., 2021). According to the resource-based view (RBV), unique organizational capabilities create competitive market advantages, and rare and unique characteristics can help achieve certain sustainable competitive advantages (Wernerfelt, 1984). Based on current policy requirements and pressures, enterprises are encouraged to implement green strategies (Shahla et al., 2020) that can promote green innovation and further promote the formation of competitive advantages (Muangmee, 2021). Simultaneously, based on a knowledge management perspective, researchers believe that corporate green culture can strengthen the relationship between green knowledge management and green innovation, and positively influence the realization of enterprise sustainable development (Abbas & Sagsan, 2019; Wang et al. 2022). An empirical analysis of Chinese listed companies found that green innovation can improve a given company's sales growth and net profits; that is, enterprise green innovation behavior can bring long-term benefits for sustainable economic performance (Zhang et al., 2019). Therefore, Hypothesis 1 was established as follows.

H1: Enterprise-level green innovation positively impacts sustainable development.

2. The Impact of Corporate/Enterprise Environmental Protection Certification on Sustainable Development Capabilities

An environmental management system (EMS) was established following the organization of the Sustainable Development Initiative at the Earth Summit in Rio de Janeiro in 1992, which called for the development of international environmental standards (Salim et al., 2018). The most widely recognized EMS standard, namely the ISO 14001 standard, was developed by the

International Organization for Standardization (ISO) in 1996 (Cañón-de-Francia & Garcés-Ayerbe, 2009). This framework aims to achieve environmental regulatory compliance by setting measurable environmental goals and periodically reviewing effectiveness (Zutshi & Sohal, 2004). Organizations can utilize its comprehensive recommended guidelines to formulate environmental policy and continuously improve the environment through consistent control over operations (MacDonald, 2005; Salim et al., 2018). ISO 14001 certification helps organizations achieve environmental goals and provides a means through which they can design and manage operations with superior environmental performance (Hu et al., 2023).

Empirical studies have shown that ISO 14001-certified firms positively impact profitability variables and sales growth because they are recognized by the market and consumers. Simultaneously, because firms can benefit from increased sales and profits, long-term profitability increases (Lee et al., 2017). A study on SMEs also found that adoption of ISO 14001 resulted in substantial performance improvements in business operations (i.e., improved internal processes and procedures), particularly in operational improvements, and subsequently led to improved financial and environmental outcomes and external social performance evaluations (Johnstone, & Hallberg, 2020). ISO 14001-certified enterprises are more competitive in the market, and this helps improve sustainable development abilities (Ferreira et al., 2019). Therefore, Hypothesis 2 was established as follows.

H2: Enterprise/corporate environmental protection certification positively impacts sustainable development.

3. The Moderating Effect of Government Support

The stakeholder theory holds that a company's development is inseparable from various stakeholder inputs or participation (Friedman & Miles, 2020). Freeman defined a stakeholder as "any group or individual who can influence or be affected by the achievement of organizational goals" (Freeman, 1984). Corporate stakeholders include both internal and external stakeholders (Laplume et al., 2008). Specifically, in terms of corporate environmental protections, internal stakeholders are groups within the enterprise that affect organizational decision-making and environmental response effects (e.g., owners, customers, employees, and suppliers). External stakeholders are individuals and groups outside the enterprise that indirectly impact the enterprise's environmental response effects (e.g., governments, analysts, environmentalists, and public media) (Yang et al., 2022).

In terms of environmental protections, corporate enviromental management is being increasingly influenced by external stakeholders (Huang, X. et al., 2021). Greater attention from external stakeholders to social and environmental issues will encourage companies to extensively disclose corporate social responsibility matters and enhance the corporate attention paid to environmental protection issues (Ramadhini, 2020). Simultaneously, improvements in corporate social responsibility among external stakeholders can improve enterprise competitiveness (Hadj, 2020), and is conducive to long-term development.

The government undertakes all social responsibility for ensuring environmental protection and sustainable development, and can adjust the quantity and quality of green innovation by increasing the intensity and range of government subsidies (Huang et al., 2019). Empirical research has found that green subsidies positively impact green product innovation. Green product innovation, in turn, can improve corporate financial performance and promote sustainable corporate development (Hu, Qin et al., 2021).

Simultaneously, government initiatives and commitments can motivate enterprises to actively implement environmental management plans, which are key factors affecting the results and

success of environmental management certification (Waxin et al., 2020). ISO 14001 certification is the most significant environmental indicator in the international trade market. Therefore, corporate managers should strengthen corporate environmental responsibility and introduce ISO 14001 certification to obtain better environmental management results from internal drivers (Liu et al., 2020); this will be more conducive to long-term development. Therefore, Hypotheses 3 and 4 were formulated as follows.

H3: The degree of government support has a positive moderating role in influencing corporate green innovation's impact on sustainable development.

H4: The degree of government support plays a positive moderating role in influencing corporate environmental protection certification's impact on sustainable development capabilities.

4. The Moderating Effect of Analyst Attention

Analyst attention can increase a given company's attention to environmental social responsibility, thus encouraging it to undertake active environmental protection activities and improving its enviromental management (Bernardi & Stark, 2018). Increasing analyst attention can help to enhance the relevant company's environmental information disclosure, which in turn will help to improve that company's popularity and financial performance (Wang et al., 2020). The study found that corporate green innovation was positively correlated with the number of stock analysts that paid attention to the company, and analyst attention could encourage managers to invest more in green innovation (Fiorillo et al., 2022). Analyst coverage can significantly improve a given company's green innovation performance. Reliance on monitoring from financial analysts can encourage managers

to promote green investment from a long-term perspective, correct any shortsightedness that focuses too much on short-term performance, and improve enterprise sustainable development levels (Han et al., 2022).

Analyst attention can effectively improve corporate environmental information disclosure levels. ISO 14001 certification is an integral part of such disclosure (Yao & Liang, 2019). As analyst attention increases, corporate environmental certification also improves. Information disclosure in environmental and sustainable development reports can promote enterprise sustainable development (Hu, Huang & Zhong, 2021). Furthermore, increased analyst attention has positively influenced the sustainable development of enterprise environmental protection certifications. Therefore, Hypotheses 5 and 6 were formulated as follows.

H5: Analyst attention positively moderates the impact of corporate green innovation on sustainable development.

H6: Analyst attention positively moderates the impact of corporate environmental certification on sustainable development capabilities.

In summary, green innovation and environmental certification play a role in promoting the sustainable development of enterprises. At the same time, government support and analyst attention can play a positive role in promoting green innovation capabilities and environmental certification to improve the sustainable development of enterprises. Fig. 1 illustrates the research model used in this study.

III. Research Design

1. Data and Samples

We used a panel dataset of 2,846 companies

Fig. 1. Study Model
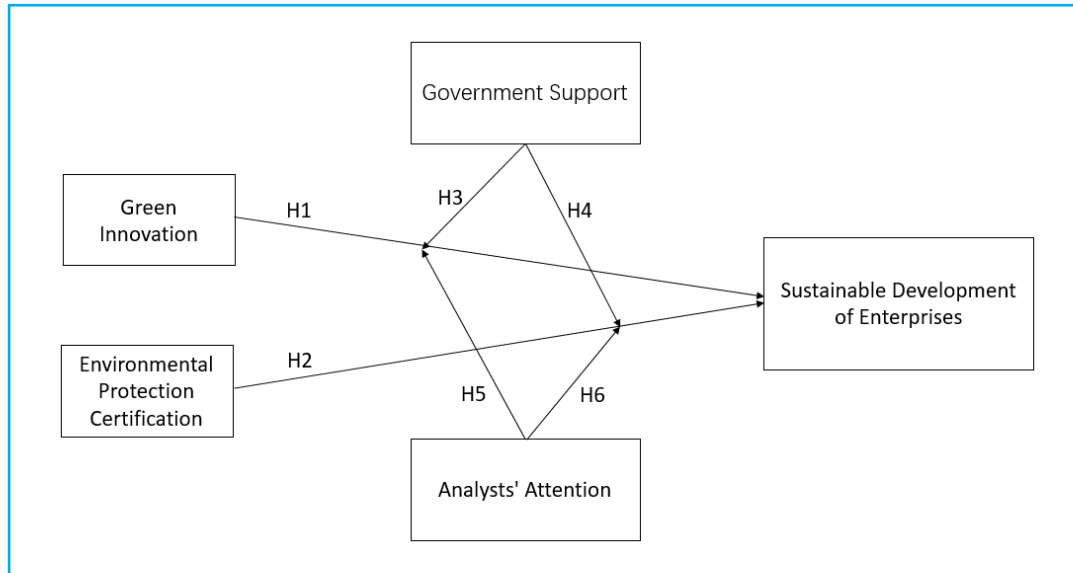
(from 2012 to 2020), using non-financial and non-real estate companies listed in Shanghai and Shenzhen as research objects. Enterprise-related data were obtained from the China Securities Market and Accounting Research database. Green patent applications and analyst attention data were sourced from the Chinese Research Data Service Platform.

To ensure research data reliability, this study used the relevant data as follows: (1) financial and real estate companies were excluded from the sample; (2) ST companies (special treatment, which represents listed companies with negative net profit for two consecutive fiscal years), ST* companies (special treatment *, which represents companies delisting warning due to loss of listed companies for three consecutive fiscal years), and PT companies (particular transfer, which represents listed companies that stopped any transactions, cleared the price, and waited for delisting) were in the sample; (3) variables in the data (excluding dummy variables) were winsorized to reduce the impact of outlier fluctuations; (4) samples with missing values were excluded; and

(5) continuous variables were logarithmized to mitigate the interference of heteroskedasticity.

2. Variable Definition

2.1. Dependent Variable

Enterprise sustainable development capacity (SGR) refers to the ability of enterprises to continue to make profits and grow steadily in existing competitive fields and future business development environments in the process of pursuing survival and development. This study used Van Horne's static model to measure corporate sustainability (Papoutsi & Sodhi, 2020). This model is intended to study the sustainable development of enterprises from the perspective of profitability and competitiveness.

2.2. Independent Variables

This study chose green innovation (GP) and environmental certification (ISO) as explanatory variables. This study used the total number of

green patent applications to measure enterprise green innovation (Yuan et al., 2021). Specifically, we took the natural logarithm of the number of green patents plus one, and then advanced GP by one year (Huang, Li & Liao, 2021). Environmental certification was represented by ISO 14001 environmental management certification, and was defined as a dummy variable. When the enterprise passed ISO 14001 environmental management standard certification, it was coded "1"; otherwise, it was coded "0" (Xu et al., 2018), which also lagged the data for one period.

2.3. Moderated Variables

This study mainly analyzed the mediating role of external stakeholders between corporate enviromental management and sustainable development capabilities, and selected government support (GOV) and analyst attention (Analyst) for analysis.

2.3.1. Governmental Support

Government support is measured based on the government subsidies and the natural logarithm (Wu & Hu, 2020) of government subsidies received by enterprises every year. Owing to the subsequent impact of government subsidy funds on enterprise development, the data were lagged by one period (Xu et al., 2021).

2.3.2. Analyst Attention

This study used the natural logarithm of the number of analysts that issued profit forecasts for a company plus one to measure analyst attention (Dai et al., 2018). Considering the long-term impact on company development, the data were compared to the next period.

2.4. Control Variables

According to the relevant literature, we selected and added a series of variables that could affect the sustainable development ability of enterprises (Li et al., 2021; Pambayun et al., 2019). The variables included enterprise SIZE (SIZE), asset-liability ratio (LEV), return on assets (ROA), equity concentration (SD), total asset turnover (ATO), accounts receivable ratio (REC), whether there was a loss (Loss), and management shareholding ratio (Mshare).

Enterprise size (SIZE) positively affects the sustainable development ability of enterprises. Large enterprises are more competitive in the industry and pay more attention to long-term stable development (Dhar et al., 2022). The higher the level of an enterprise's asset-liability ratio (LEV), the greater the pressure on the enterprise's debt servicing, which harms its sustainable development capability (Zhang et al., 2022). A higher return on assets (ROA) indicates that the enterprise shows better utilization of assets, and a stronger profitability of assets, which has a positive impact on the enterprise's sustainable development capability (Bassetti et al., 2021). More concentrated enterprise equity (SD) will increase enterprise investment in environmental protection, which is conducive to the improvement of sustainable development ability (Zhang et al., 2022). Total asset turnover (ATO) reflects the overall asset operation ability of the enterprise, and a larger value indicates that the enterprise utilizes total assets more efficiently, which has a positive impact on the sustainable development ability (Altahtamouni et al., 2022). The proportion of accounts receivable (REC) and whether the enterprise suffers a loss (Loss) are both negatively correlated with enterprise sustainability. This is because more accounts receivable indicates weaker liquidity, which harms corporate sustainability. as does a loss (Zhang et al., 2021; Twesige et al., 2019). More management shareholding (Mshare) is helpful for enterprises to focus on long-term and stable development, which has a positive impact on sustainability (Noja et al., 2020).

Furthermore, we introduced year effect (Year) and industry effect (Industry) as the control variables. Table 1 lists the names and definitions of the variables used in this study.

Table 1. Variable Definition

Variable Type	Variable Name	Variable Symbol	Measurement Methods
Dependent Variable	Sustainable development capacity	SGR	Net sales interest rate × total asset turnover × income retention rate × equity multiplier/(1—net sales interest rate × total asset turnover × income retention rate × equity multiplier)
Independent Variables	Green innovation	GP	LN (Number of green patent applications for enterprises +1)
	Environmental certification	ISO	ISO 14000 environmental certification management system certification is 1, otherwise 0
Moderating Variables	Government support	GOV	LN (Government Subsidy Amount)
	Analyst attention	Analyst	LN (Analyst Followers +1)
Control Variables	Enterprise size	SIZE	Ln (The book value of total assets at the end of the year)
	Asset-Liability Ratio	LEV	Total Liabilities/Total Assets
	Return on assets	ROA	Net profit/Average balance of total assets
	Equity concentration	SD	The largest shareholder holds the shareholding proportion
	Total asset turnover	ATO	The ratio of net operating income to total assets
	Proportion of accounts receivable	REC	The ratio of net accounts receivable to total assets
	Whether to lose money or not	Loss	Net profit for the year is negative = 1; net profit for the year is positive = 0
	Percentage of management shareholding	Mshare	Management shareholding data divided by total share capital
	Year	YEAR	Dummy variables
	Industry	IND	Dummy variables

3. Model Design

3.1. Benchmark Model

Based on the aforementioned theoretical analysis of the impact of corporate enviromental management on sustainable development capabilities, this study constructed the following panel econometric model.

$$SGR_{i,t} = \beta_0 + \beta_1 GP_{i,t\text{-}1} + \alpha Control_{i,t} + \delta_i + \gamma_t + \varepsilon_{i,t} \tag{1}$$

$$SGR_{i,t} = \beta_0 + \beta_1 ISO_{i,t\text{-}1} + \alpha Control_{i,t} + \delta_i + \gamma_t + \varepsilon_{i,t} \tag{2}$$

Models (1) and (2) tested the impact of green innovation and environmental protection certification on enterprise sustainable development abilities. In the model, the subscript t represented the year, and the subscript i represented the enterprise. $SGR_{i,t}$ indicated the sustainable development capability of enterprise i in year t, and $GP_{i,t\text{-}1}$ indicated the green innovation level of enterprise i in year t. $ISO_{i,t\text{-}1}$ indicated whether enterprise i had passed the environmental protection certification in year t, and $Control_{i,t}$ expressed the control variable. Furthermore, to reduce the influence of individual heterogeneity and year characteristics on enterprise sustainable development abilities, this study considered industry fixed effects δ_i and year fixed effects γ_t. Meanwhile, β_0 was the constant term of the regression model, and $\varepsilon_{i,t}$ was the random disturbance term of the model.

If the β_0 in Model (1) is positive and significant, it indicates that a greater amount of green innovation will lead to stronger enterprise sustainable development abilities. Similarly, β_0 in Model (2) is positive and significant, indicating that enterprises with environmental protection certification have stronger sustainable development abilities than those without environmental protection certification.

3.2. Moderating Effect Model

To further explore whether there are heterogeneous differences in government support and analyst attention between corporate enviromental management and sustainable development capabilities, this study constructed Models (3)through (6) to verify whether government support and analyst attention had a moderating effect on the relationship between

enterprise environmental protection abilities and sustainable development abilities, which was used for verifying Hypotheses 3 – 6.

$$SGR_{i,t} = \beta_0 + \beta_1 GP_{i,t\text{-}1} + + \beta_2 GOV_{i,t\text{-}1} + \beta_3 GP \times GOV_{i,t\text{-}1} + \alpha Control_{i,t} + \delta_i + \gamma_t + \varepsilon_{it} \tag{3}$$

$$SGR_{i,t} = \beta_0 + \beta_1 ISO_{i,t\text{-}1} + + \beta_2 GOV_{i,t\text{-}1} + \beta_3 ISO \times GOV_{i,t\text{-}1} + \alpha Control_{i,t} + \delta_i + \gamma_t + \varepsilon_{it} \tag{4}$$

$$SGR_{i,t} = \beta_0 + \beta_1 GP_{i,t\text{-}1} + + \beta_2 Analyst_{i,t\text{-}1} + \beta_3 GP \times Analyst_{i,t\text{-}1} + \alpha Control_{i,t} + \delta_i + \gamma_t + \varepsilon_{it} \tag{5}$$

$$SGR_{i,t} = \beta_0 + \beta_1 ISO_{i,t\text{-}1} + + \beta_2 Analyst_{i,t\text{-}1} + \beta_3 ISO \times Analyst_{i,t\text{-}1} + \alpha Control_{i,t} + \delta_i + \gamma_t + \varepsilon_{it} \tag{6}$$

A positive and significant β_3 in Models (3) and (5) indicates that government support and analyst attention have a positive moderating effect on the relationship between corporate enviromental management and sustainable development capabilities. Similarly, if β_3 in Model (4) and (6) is greater than 0 and significant, it indicates that government support and analyst attention positively regulate corporate environmental protection and sustainable development capabilities. In this study, the p-values of the Hausman test results were all less than 0.05; therefore, the fixed-effects regression model of controlling year and industry was selected.

IV. Empirical Results

1. Descriptive Statistics

The average value of enterprise sustainable development capability (*SGR*) was 0.560, and the minimum value was -0.710, indicating that the sustainable development capability of sample

enterprises was generally low. The standard deviation was 0.564, indicating a large difference among enterprises. The average value of green innovation (*GP*) was 0.508, and the minimum value was 0, indicating that the overall awareness of green innovation was not strong among enterprises. The standard deviation was 1.028, indicating that the level of green innovation among the sample enterprises varied greatly. The average number of environmental certifications (*ISO*) was 0.230, the minimum value was 0, and the standard deviation was 0.420, indicating that few enterprises passed ISO 14001 environmental management certification; furthermore, there were certain differences among the sample enterprises. The average amount of government support (*GOV*)

was 16.50, and the standard deviation was 1.580, indicating that there were large differences in government support among the sample enterprises. The average amount of analyst attention (*Analyst*) was 1.540, the minimum value was 0, and the standard deviation was 1.150, indicating that the sample companies generally received relatively low attention from analysts, and that there were large differences.

Furthermore, the control variables were normal. The mean enterprise size (*SIZE*) was 22.39, and the standard deviation was 1.207. The average asset-liability ratio (*LEV*) was 0.460, and the standard deviation was 0.180. This indicates that the strength differences among the sample enterprises were more significant.

Table 2. Descriptive Statistics

Variable	N	Mean	SD	Min	P50	Max
SGR	15891	0.560	0.564	-0.710	0.450	2.470
GP	15891	0.508	1.028	0	0	7.233
ISO	15891	0.230	0.420	0	0	1
GOV	15891	16.50	1.580	11.85	16.49	20.06
Analyst	15891	1.540	1.150	0	1.610	4.330
SIZE	15891	22.39	1.207	20.07	22.23	25.69
LEV	15891	0.460	0.180	0.090	0.450	0.850
ROA	15891	0.032	0.060	-0.240	0.033	0.160
SD	15891	0.340	0.144	0.088	0.310	0.690
ATO	15891	0.660	0.419	0.085	0.570	2.160
REC	15891	0.130	0.109	0	0.110	0.730
Loss	15891	0.110	0.319	0	0	1
Mshare	15891	0.120	0.292	0	0	20.17

2. Correlation Analysis

This study used a Pearson correlation analysis. As shown in Table 3, there was a significant

positive correlation between corporate sustainable development capabilities and green innovation at the 1% level. Similarly, corporate sustainable development capabilities and environmental

protection certification were significantly positively correlated at the 1% level. This verified Hypotheses (1) and (2) to a certain extent.

Furthermore, the VIF value of this regression model was 1.50, indicating that there was no multicollinearity problem.

Table 3. Correlation Analysis

	SGR	GP	ISO	GOV	Analyst	SIZE	LEV	ROA	Top1	ATO	REC	Loss	Mshare
SGR	1												
GP	0.128***	1											
ISO	0.071***	0.114***	1										
GOV	0.168***	0.283***	0.052***	1									
Analyst	0.310***	0.209***	0.032***	0.305***	1								
SIZE	0.232***	0.275***	0.014*	0.590***	0.380***	1							
LEV	-0.115***	0.121***	-0.028***	0.204***	-0.031***	0.447***	1						
ROA	0.510***	0.044***	0.044***	0.044***	0.297***	0.060***	-0.328***	1					
SD	0.157***	0.028***	-0.007	0.0995***	0.073***	0.212***	0.076***	0.116***	1				
ATO	0.176***	-0.015*	0.016**	0.054***	0.094***	0.073***	0.152***	0.187***	0.099***	1			
REC	-0.027***	0.101***	0.037***	-0.063***	-0.022***	-0.213***	0.025***	-0.006	-0.109***	0.143***	1		
Loss	-0.313***	-0.042***	-0.036***	-0.037***	-0.162***	-0.078***	0.182***	-0.696***	-0.083***	-0.126***	-0.015*	1	
Mshare	0.024***	-0.009	0.007	-0.124***	0.051***	-0.204***	-0.143***	0.097***	-0.060***	-0.024***	0.137***	-0.042***	1

Note: ***$p<0.01$, **$p<0.05$, *$p<0.1$.

3. Regression Analysis

The regression results are presented in Table 4. The results of Model (1) show that there was a significant positive correlation between the sustainable development capabilities of enterprises and the level of green innovation. The regression coefficient at the 1% significance level was 0.015, which indicated that green innovation positively affected the sustainable development abilities of the enterprise. In short, a higher level of green innovation led to stronger sustainable development

abilities in enterprises. Therefore, Hypothesis 1 was supported. The results of Model (2) show that there was a significant positive correlation between sustainable corporate development capabilities and environmental certification. The regression coefficient at the 1% significance level was 0.015, indicating that environmental protection certification positively affected the sustainable development ability of enterprises. Enterprises with environmental protection certification have stronger sustainable development abilities than enterprises without environmental protection certification. Therefore, Hypothesis 2 was supported. Thus, stronger environmental protection abilities in a given enterprise led to a more conducive environment for the improvement of financial performance and governance abilities; this is conducive to the long-term development of the enterprise, and improves sustainable development abilities.

The results of Models (3) and (4) (Columns 3 and 4) show that the regression coefficients of green innovation, environmental protection certification, and corporate sustainable development capability were significantly positive (0.011**, 0.013*), with significance levels of 5% and 10%, respectively. Simultaneously, the interaction terms of environmental protection certification, government support, and green innovation were significantly positively correlated with the sustainable development ability of enterprises at the levels of 1% and 5%, respectively, and the regression coefficients were 0.006 and 0.010. After adding the interaction item, R-squared changed from 0.211 in Model (1) to 0.212 in Model (3), and to 0.211 in Model (4), indicating that government support made significant contributions with regard to green innovation and environmental certification to corporate sustainable development. This finding shows that the degree of government support can positively adjust the impact of green innovation and environmental protection certification on the sustainable development of enterprises, thus supporting Hypotheses 3 and 4. This may be because the increase in government support, especially the increase in financial subsidies, reduces the pressure on enterprises in terms of environmental protection. Further, it allows for the provision of more resources for green innovation and green certification, and more consideration to the long-term development strategies of enterprises. It will also attract the attention of stakeholders, which is conducive to improving the sustainable development ability of enterprises. Therefore, government support plays a positive role in promoting the relationship between corporate environmental protection and sustainable development capabilities.

The results of Models (5) and (6) (Columns 5 and 6) show that the regression coefficients between green innovation, environmental protection certification, and corporate sustainable development capabilities are significantly positive (0.010 **, 0.013*), with significance levels of 5% and 10%, respectively. Simultaneously, the interaction items of green innovation, environmental protection certification, and analyst attention are significantly positively correlated with enterprise sustainable development abilities at the levels of 1% and 5%, and the regression coefficients are 0.010 and 0.009, respectively. After adding the interaction item, the R-squared increased from 0.210 in Model (2) to 0.219 in Model (5), and to 0.218 in Model (6), indicating that analysts pay attention to the significant contributions made by green innovation and environmental protection certification to enterprise sustainable development. This shows that analysts are concerned about positively regulating green innovation and environmental protection certification's impact on corporate sustainability, thus supporting Hypotheses 5 and 6. This may be due to increased analyst attention. To attract investors and increase investment confidence, enterprises must increase investment in environmental protection. This, in turn, can promote green innovation and environmental certification in enterprises, thus enhancing enviromental management. Making further improvements in the abilities and effects of enterprise environmental governance will be more conducive to the enhancement of sustainable development ability.

Table 4. Regression Analysis

Variable	(1) SGR	(2) SGR	(3) SGR	(4) SGR	(5) SGR	(6) SGR
GP	0.015*** (3.66)		0.011** (2.42)		0.010** (2.30)	
ISO		0.015** (2.12)		0.013* (1.77)		0.013* (1.74)
GP* GOV			0.006*** (3.08)			
GP* Analyst					0.010*** (3.82)	
ISO*GOV				0.010** (2.44)		
ISO* Analyst						0.009** (2.03)
GOV			0.008*** (3.12)	0.007*** (2.95)		
Analyst					0.036*** (11.36)	0.036*** (11.48)
SIZE	0.013* (1.90)	0.014** (2.07)	0.008 (1.11)	0.009 (1.29)	-0.009 (-1.30)	-0.009 (-1.28)
LEV	0.055** (2.06)	0.054** (2.03)	0.055** (2.04)	0.054** (2.03)	0.099*** (3.66)	0.100*** (3.70)
ROA	2.330*** (34.60)	2.329*** (34.54)	2.343*** (34.76)	2.339*** (34.64)	2.301*** (34.31)	2.300*** (34.26)
SD	0.438*** (10.31)	0.436*** (10.24)	0.439*** (10.33)	0.438*** (10.29)	0.420*** (9.92)	0.424*** (9.99)
ATO	0.058*** (4.36)	0.057*** (4.32)	0.059*** (4.48)	0.059*** (4.42)	0.057*** (4.34)	0.057*** (4.34)
REC	0.416*** (8.24)	0.415*** (8.18)	0.414*** (8.19)	0.411*** (8.11)	0.391*** (7.76)	0.389*** (7.71)
Loss	0.021** (2.08)	0.021** (2.05)	0.021** (2.12)	0.020** (2.05)	0.020** (1.96)	0.019* (1.96)
Mshare	0.075*** (5.77)	0.076*** (5.79)	0.076*** (5.81)	0.076*** (5.85)	0.072*** (5.54)	0.072*** (5.52)
Constant	-0.066 (-0.39)	-0.087 (-0.51)	-0.081 (-0.48)	-0.094 (-0.55)	0.328* (1.90)	0.319* (1.84)
Industry	YES	YES	YES	YES	YES	YES
year	YES	YES	YES	YES	YES	YES
Observations	15,902	15,869	15,902	15,869	15,869	15,869
R-squared	0.211	0.210	0.212	0.211	0.219	0.218
F	96.50	95.88	91.99	91.29	95.87	95.32

Notes: 1. The T-statistics are shown in parentheses.
    2. ***$p<0.01$, **$p<0.05$, *$p<0.1$.

Table 5. Robustness Test

Variable	First Stage		Second Stage
	(1) GP	(2) ISO	(3) SGR
LGP	0.774*** (128.32)	0.018*** (5.24)	
LISO	0.039*** (3.07)	0.640*** (89.85)	
GP			0.054*** (8.64)
ISO			0.080*** (5.00)
SIZE	0.069*** (11.93)	-0.002 (-0.51)	0.089*** (18.76)
LEV	0.017 (0.44)	-0. 012 (-0.57)	-0.280*** (-9.03)
ROA	0.193 (1.44)	0. 066 (0.88)	4.969*** (46.26)
SD	-0.025 (-0.65)	0. 008 (0.35)	0.284*** (9.12)
ATO	0.013 (0.91)	0.007 (0.87)	0.065*** (5.47)
REC	0.182*** (3.23)	0.000 (0.02)	0.067 (1.49)
Loss	-0.002 (-0.08)	-0.014 (-1.13)	0.177*** (9.69)
Mshare	0.015 (0.84)	-0.004 (-0.36)	0.021 (1.46)
Constant	-1.480*** (-11.72)	0.135* (1.91)	-1.841*** (-17.70)
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	12433	12433	12433
R-squared			0.3494
Underidentification test (Kleibergen–Paap rk LM statistic)	2381.568 (Chi-sq(1) p-value = 0.0000)		
Weak identification test			
(Cragg–Donald Wald F statistic)	3924.260		
(Kleibergen–Paap rk Wald F statistic)	2445.551		
10% maximal IV SIZE	7.03		

Notes: 1. The T-statistics are shown in parentheses.
          2. ***$p<0.01$, **$p<0.05$, *$p<0.1$.

4. Robustness Test

The study findings indicated that, when benchmark regression is used to study the impact of green innovation and environmental protection certification on enterprise sustainable development abilities, omitted variables and bidirectional causality may lead to endogeneity problems. In short, green innovation and environmental protection certification are conducive to sustainable development; in turn, sustainable development abilities can also promote green innovation and environmental protection certification. To avoid the bias caused by reverse causality in the empirical results, this study uses green innovation lagging one period and environmental protection certification lagging one period as the explanatory variables of the fixed effect regression model. It is necessary to further test the endogeneity model to ensure that the research results are credible. Therefore, this study used 2SLS regression, green innovation lag 2 (*LGP*), and environmental certification lag 2 (*LISO*) as the instrumental variables.

The 2SLS regression results are shown in Table 5. As can be seen in the first stage (Columns 1 and 2), the regression coefficients of *GP*, *LGP*, *ISO*, and *LISO* were all significantly positive at the 1% level (0.774***, 0.640***). In the second stage (Column 3), the regression coefficients of *GP*, *ISO*, and corporate sustainable development abilities (after fitting in the first stage) were also significantly positive at the 1% level (0. 054 ***, 0. 080 ***). These results showed that, after considering endogeneity issues, there was still a significant positive correlation between corporate green innovation, environmental protection certification, and corporate sustainable development capabilities; this result once again verified the correctness of Hypotheses 1 and 2. Furthermore, the identification test of the model (Kleibergen–Paap rk LM statistic) provided a value of 2381.568, and the corresponding p-value was 0; this indicated that the instrumental variable was identifiable. The weak identification tests (Cragg–Donald Wald F statistic and Kleibergen–Paap rk

Wald F statistic) of the model provided values of 3924.260 and 2445.551, respectively, both of which are greater than the critical value of Stock-Yogo's weak ID test at a 10% judgment level: 7.03. This indicates that there is a strong correlation between the instrumental and independent variables, and that there is no weak instrumental variable problem.

V. Discussion and Conclusion

1. Discussion

In recent years, the issue of corporate environmental protection has received continuous global attention. From the perspective of environmental protection, it is of social significance for enterprises to pay attention to environmental protection issues; however, we must pay attention to whether there is an endogeneity-related motivation for enterprises. This study found that green innovation and environmental protection certification positively affect enterprise sustainable development, and government support and analyst attention positively impact this process.

First, green innovation positively affects enterprise development. Enterprise green innovation helps save energy, reduce emissions, and improve quality and efficiency (Yang et al.,2020). Simultaneously, enterprises can obtain more stable funds to support innovative projects, and this, in turn, can realize rational and optimal funding allocation (Hao et al., 2022). Furthermore, this promotes financial and environmental performance (Mahabubur, 2022).

Second, the role of environmental certification has become increasingly prominent. Although environmental protection certification evaluation has been mixed, with the global promotion and recognition of the ISO 14001 system, it is particularly important for enterprises to obtain environmental protection certification if they want to open their doors to the world (Anthony, 2022; Oyewale & Kaur, 2023). Simultaneously, China is also promoting a certification system

in line with international standards. Enterprises that obtain environmental protection certification can undoubtedly enhance consumer recognition. A relevant company can increase sales volume and improve performance while gaining a good reputation.

Finally, any government support provided to stakeholders and analysts has heterogeneous effects on the relationship between green innovation, environmental certification, and corporate sustainability (Veronica et al., 2020). Specifically, government support for policies or funds can reduce the investment pressure on enterprises in terms of environmental protection; this, in turn, can improve green innovation and environmental protection certification. Further, this can enhance enterprise environmental protection abilities and promote the improvement of sustainable abilities (Xia et al.,2022). Simultaneously, an increase in analyst attention can also drive companies to pay attention to environmental protection issues and improve enviromental management. Therefore, through government support and appropriate attention from analysts, the impact of green innovation and environmental protection certification on enterprise sustainable development abilities can be significantly enhanced (Xin et al., 2021).

2. Conclusion, Implications, and Limitations

2.1. Conclusion

This study selected 2,846 A-share listed companies on China's Shanghai and Shenzhen Stock Exchanges from 2012 to 2020 as research samples. Our research empirically examined the impact of green innovation and environmental protection certification on corporate sustainable development capabilities; furthermore, it explored the relationship between government support and analyst attention with regard to green innovation, environmental certification, and enterprise sustainable development abilities.

The current research made the following

conclusions. Green innovation and environmental protection certification promote the improvement of corporate sustainable development capabilities; this finding supported Hypotheses 1 and 2. Further exploration revealed that government support and analyst attention can have a moderating effect on green innovation, environmental protection certification, and corporate sustainable development capabilities. Specifically, an increase in government support and analyst attention will enhance the positive impact of green innovation and environmental protection certification on sustainable development abilities. These findings supported Hypotheses 3, 4, 5, and 6.

2.2. Implications

The current results provide the following theoretical and practical implications for promoting corporate environmental protection and sustainable development capabilities.

The first involves enriching theoretical research on enterprises and stakeholder sustainable development; this can provide constructive guidance for the formulation of macro policies to promote nationwide economic and social development. Second, enterprises should heavily focus on improving environmental protection abilities, especially green innovation and environmental protection certification, as it will help to improve sustainable abilities (Dhar et al., 2022; Kwon & Shin, 2022; Zhu, 2022). Green innovation and environmental protection certification can help enterprises enhance competitive advantages by promoting energy conservation, emission reduction, and quality and efficiency improvement; this, in turn, can optimize resource allocation and promote high-quality development (Luo et al., 2023; Yuan et al., 2022). Third, stakeholders should focus on their regulatory role in enterprise environmental protection and sustainable development abilities (Seroka-Stolka et al., 2020). Government support and analyst attention can strongly impact the relationship between corporate environmental protection and sustainable development

capabilities; both should make reasonable use of this influencing mechanism. With regard to the government, environmental protection policies (e.g., fiscal subsidies and tax incentives) can be formulated to encourage enterprises to achieve high-quality development by improving enviromental management (Liu et al., 2022). Analysts should be able to access enterprise information that is timely and accurate to disclose corporate environmental behavior (Papoutsi et al., 2020).

2.3. Limitations

This study has focused on the relationship between corporate environmental protection and sustainable development capabilities, which are not necessarily applicable to non-listed companies. Simultaneously, only government support and analyst attention have been selected to examine the regulatory effect of stakeholders. Other stakeholder attitudes or behaviors have not been studied, and these can be further explored in future research.

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Do a Firm's Depth and Diversity of International Experience Increase Its Speed of Foreign Expansion? Evidence from South Korean Firms*

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ABSTRACT

Purpose – Based on the Uppsala model and organizational learning theory, this study empirically analyzes the effects of South Korean firm international experience depth and diversity on the speed of foreign expansion.

Design/Methodology/Approach – The hypotheses were tested using GLS regression analysis and a panel data set of 424 Korean manufacturing firms listed on the KOSPI market from 1999–2007.

Findings – First, the depth of firm international experience has a negative effect on the speed of foreign expansion. Second, the diversity of international experience has a positive influence on the speed of foreign expansion.

Research Implications – First, depth of international experience has a negative impact on the speed of foreign expansion. This is contrary to Hypothesis 1, indicating that if a firm operates its business in a particular country for an extended duration, its level of commitment to that country could increase, hindering its swift expansion to another country. Second, diversity of international experience has a positive influence on speed of foreign expansion, which implies that, by being exposed to varied national environments, a firm's diverse international experiences, represented by its official and unofficial management systems and operational experience tailored to its business in each country, reduces its perceived risk of uncertainty of internationalization, or increases its capability of effectively responding to the liability of foreignness, thus positively affecting the speed of foreign expansion.

Keywords: diverse markets, foreign expansion, internationalization, international experience
JEL Classifications: F20, F23, F29

I. Introduction

Firms with high internationalization speed can enjoy the benefits of being front-runners and achieve better international performance compared to other firms (Chang & Rhee, 2011; Chetty et al., 2014). In particular, as competition in the global market intensifies, internationalization is perceived as an important route for firms to secure a competitive advantage (Cheng, 2022; Cheng et al., 2020; Gulanowski et al., 2018). Chang and Rhee (2011) claimed that a firm's ability to swiftly respond to environmental changes in a dynamic corporate environment can be an important source of success, and they stressed the importance of time-based competitive advantage. In this context, a firm's internationalization speed is a crucial decision-making task for corporate managers (Chetty et al., 2014), and it is regarded as one of the most significant topics in the field of international business (Hutzschenreuter et al., 2016; Li et al., 2015; Putzhammer et al., 2020). However, among general internationalization-related studies, research on the speed of internationalization is relatively underexplored (Casillas & Acedo, 2013; Hutzschenreuter et al., 2016).

Existing research related to internationalization speed investigated the determining factors of rapid internationalization speed focused mainly on international new venture firms or small and medium-sized enterprises (Acedo & Jones, 2007; Casillas & Acedo, 2013; Hennart et al., 2021; Hilmersson & Johanson, 2016; Kalinic & Forza, 2012; Kim & Lee, 2021; Li et al., 2015; Oviatt & McDougall, 2005). Additionally, previous research has mostly discussed entrepreneurship, social networks, with firm strategies, capabilities, and knowledge as key factors affecting internationalization speed (Acedo & Jones, 2007; Casillas & Acedo, 2013; Chetty et al., 2014; Li et al., 2015).

Therefore, there are research gaps to be addressed. First, previous studies argued that firm experiential knowledge is an important factor influencing internationalization speed; however, they only considered the experience of a firm in a one-dimensional manner (Bruneel et al., 2010; Casillas & Moreno-Menéndez, 2014; Tang, 2019). Very few studies have analyzed firm experience from multi-dimensional aspects in the Korean context. Additionally, the various means of obtaining experiential knowledge, including the diversity and depth of accumulated experience, have not garnered significant academic attention from the perspective of organizational learning (Casillas & Moreno-Menéndez, 2014). It is important to analyze a firm's experiential knowledge by categorizing it into different types of international experience. Diverse types of internationalization experiences facilitate a firm's international expansion (Bruneel et al., 2010), and could be applied to the firm's overall international operation (Clarke et al., 2013). Additionally, the type of accumulated knowledge differs depending on the type of experience (Chetty et al., 2006; De Clercq et al., 2012). Second, since the speed of internationalization is a multi-dimensional construct (Casillas & Acedo, 2013; Chang & Rhee, 2011; Clarke et al., 2013), the speed of foreign expansion is a construct that differs from the speed of internationalization. However, previous research in the Korean context has mainly investigated the determining factors of internationalization speed. Although this type of speed is important, this study aims to include a construct that can encompass the number of foreign direct investments (FDIs) executed during the period. In fact, several scholars have made a distinction between speed, and speed of foreign expansion. *"Speed in this context is generally defined as a relationship between a specific period of time and a company's completion of certain events. Specifically, speed of FDI expansions (SFEs) has been operationalized as the number of FDIs taken by a firm over a specific period of time"* (Yang et al., 2017, 74). Thus, the speed of foreign expansion indicates speed in terms of how fast a firm entered the foreign market, and also implies how many FDIs were executed in a certain period. Therefore, the speed of foreign expansion reflects how many FDIs were executed in a short period of time (Chang & Rhee, 2011; Lin, 2012), and a

higher speed represents that a firm has executed more FDIs in a new country over a specific period (Chang & Rhee, 2011). In other words, unlike the speed of internationalization, the speed of foreign expansion further includes geographical expansion through FDIs in various countries over a certain period of time, which involves a more complicated, higher risk level.

To overcome the limitations of previous research, this study seeks to answer to the following question. Do a firm's depth and diversity of international experience increase its speed of foreign expansion? To addresses the research gaps identified above, the purpose of this study is to empirically analyze the effects of South Korean firm international experience depth and diversity on speed of foreign expansion based on the Uppsala model and organizational learning theory. Specifically, this study examines the effect that the different types of experiential knowledge have on the pace of foreign expansion. In this study, the depth of international experience refers to a firm's accumulated experience in a particular country, which reflects the cumulative depth of decision-making. The diversity of international experience refers to the diversity of foreign markets (Casillas & Moreno-Menéndez, 2014). We test the hypotheses based on a panel data set of 424 Korean manufacturing firms listed on the KOSPI market from 1999–2007 via GLS regression.

II. Theoretical Background and Literature Review

The Uppsala model, a traditional theory on internationalization, considers knowledge of the foreign market a key factor in a firm's internationalization process (Hennart et al., 2021; Johanson & Vahlne, 2017). More specifically, the model predicts that as a firm expands overseas, it obtains new knowledge of the foreign market, which changes the firm's perception of internationalization-related risks and opportunities, as well as its commitment toward the market (Gulanowski, et al., 2018;

Johanson & Vahlne, 2017; Yildiz et al., 2022). This model emphasizes the importance of experiential knowledge in this aspect (Chetty et al., 2006), and experiential knowledge is a construct at the center of organizational learning (Putzhammer et al., 2020).

From the perspective of the organizational learning theory (Hutzschenreuter et al., 2016; Li et al., 2015), knowledge related to a foreign market can be gradually acquired through means such as field experience in the foreign market (Casillas & Moreno-Menéndez, 2014; Clarke et al., 2013). Experiential knowledge is known to play a key role in the knowledge accumulation, transfer, and adaptation process (García-Gacía et al., 2017).

Firms can study the targeted foreign market through the internationalization experience acquired in said foreign market. Additionally, they can develop business capabilities called internationalization capabilities by amassing various types of knowledge, including ways to start internationalization activities (Bruneel et al., 2010; Yang et al., 2017). The development and integration of internationalization capabilities act as important mechanisms enabling a firm that has achieved internationalization in a short period of time to swiftly maintain its proportion of overseas sales (Hilmersson et al., 2017). Generally, firm internationalization is known to significantly increase firm complexity because of the differences in each country's culture and demand (Li et al., 2015). However, in addition to reducing the complexity and uncertainty of internationalization, experiential knowledge helps the firm identify or evaluate new business opportunities in diverse markets (Gulanowski et al., 2018).

Therefore, studies that investigate the factors affecting firm internationalization speed emphasize experiential knowledge among all types of firm knowledge (Chetty et al., 2014; Himersson et al., 2017; Yang et al., 2017). Experiential knowledge regarding the foreign market generally originates from the accumulation of two types of experience (Chetty et al., 2014), which significantly influence firm internationalization speed (Casillas & Moreno-Menéndez, 2014). Experiential learning

of internationalization can be divided into two different origins, represented by the depth and diversity of experience (Bruneel et al., 2010). The more the experiential knowledge is derived from the aspects of diversity and repetition over a certain period of time, the larger its effect on the speed of internationalization (Chetty et al., 2014).

Speed of internationalization represents the time taken for a firm to begin internationalization after establishment. In other words, it indicates how rapidly internationalization proceeds after a company is founded (Hilmersson et al., 2017). In this study, the speed of foreign expansion refers to "*the time interval between two consecutive FDI activities; it determines whether a firm may seize the opportunity to develop global competitiveness and catch up to its internationally established competitors*" (Tang, 2019, 1). Additionally, the speed of foreign expansion is operationalized as "*the average number of FDIs in new countries per year since a firm's first FDI*" (Chang & Rhee, 2011, 981).

III. Research Hypotheses

1. Firm Depth of International Experience and Speed of Foreign Expansion

We argue that a firm's depth of international experience will have a positive relationship with the speed of foreign expansion since the accumulation of more knowledge in the foreign market increases the firm's information processing speed regarding the foreign market, as well as its response speed pertaining to that information (Chetty et al., 2014; Gulanowski et al., 2018; Li et al., 2015).

Firm internationalization is a complex and uncertain process (Bruneel et al., 2010; Meng, 2023). Therefore, it requires considerable management abilities involving complex tasks when evaluating opportunities related to internationalization, even after a firm has entered the foreign market (Hutzschenreuter et al., 2016).

As the absence of relevant knowledge regarding the foreign market hinders a firm's international expansion, many previous studies have mentioned the lack of knowledge about the foreign market as a massive obstacle to internationalization (Li et al., 2015).

Therefore, when planning a venture into a new country, several companies have a tendency to internationalize when they decide that sufficient knowledge has been accumulated to successfully operate the business in that country (Li et al., 2015). This is because the foreign market-related knowledge that a firm possesses can be utilized as a means to detect new business opportunities in that market. Thus, along with the importance of using knowledge to detect market opportunities, recently, in relation to the viewpoint of opportunity development, the perspective that the uncertainties of a foreign market can be reduced by developing opportunities using existing knowledge is also gaining attention (Gulanowski et al., 2018).

Firm internationalization entails complex tasks that involve evaluating internationalization opportunities or require substantial management abilities (Hutzschenreuter et al., 2016). Therefore, if the company has sufficient knowledge for internationalization, it is likely to perceive the risk associated with internationalization to be low. Consequently, the possibility that it will make a more rapid decision regarding internationalization increases. In fact, several scholars have agreed that possessing more knowledge of a foreign market or the process of penetrating foreign markets enables firms to make better decisions about internationalization-related challenges (Chetty et al., 2014; Gulanowski et al., 2018; Li et al., 2015).

Experience in a host country develops a firm's general knowledge or capabilities that can be applied to the local environment, and a company with extensive experience in a host country faces fewer operational challenges (Delios & Beamish, 2001). This knowledge of the local market increases both the company's information processing speed regarding the foreign market and its response speed regarding that information (Li et al., 2015).

As previously stated, firm experience regarding a foreign market is traditionally an important means of learning for firm internationalization (Bruneel et al., 2010), and firms expand more into an international market based on the experiential knowledge accumulated through international experience (Clarke et al., 2013; Kim et al., 2022; Yildiz et al., 2022). As a matter of fact, the knowledge amassed by a firm facilitates further internationalization (Bruneel et al., 2010).

Pursuing rapid foreign expansion by allocating more employees qualified to handle international business activities and expending financial resources over a specific period of time indicates that the firm's level of commitment to the international market is higher as compared to a firm with a relatively slower speed of internationalization (Chetty et al., 2014). The accumulation of more knowledge in the foreign market increases a firm's information processing speed regarding the foreign market and its response speed pertaining to that information (Chetty et al., 2014; Gulanowski et al., 2018; Li et al., 2015). Therefore, it is likely that the firm will perceive the risk associated with internationalization to be low. Hence, the possibility of the firm making a swift decision regarding internationalization increases; therefore, the following hypothesis is proposed.

H1: A firm's depth of international experience will have a positive relationship with the speed of foreign expansion.

2. Firm Diversity of International Experience and Speed of Foreign Expansion

We posit that a firm's diversity of international experience will have a positive relationship with its speed of foreign expansion. In being exposed to various national environments worldwide, a firm's diverse international experience, represented by its official and unofficial management systems and operational experience matched to its business in each country, decreases its perceived risk of

uncertainty of internationalization, or enhances its ability to effectively respond to the liability of foreignness (Li et al., 2015; Yang et al., 2017), thus positively affecting the speed of foreign expansion.

Each country has differing cultural and institutional aspects, and a distinct national environment. This includes customers in the local market, local suppliers, local networks, and government characteristics. Therefore, venturing into foreign countries requires a sound understanding of distinctive national environments, which necessitates significant time and analysis (Lin, 2012). Moreover, firms must establish various formal and informal management systems to manage the businesses in each of the countries of expansion (Li et al., 2015).

Thus, as a firm's international experience increases as a result of venturing into diverse countries, the context in which the firm gains international experience also becomes more diverse (Clarke et al., 2013). Each country's market dynamics are unique, and firms can learn more from different, rather than identical, business situations (Chetty et al., 2014). In this regard, if a firm gains experience in various overseas markets, it acquires the ability to compare different business situations before selecting an appropriate strategy for the current situation (Chetty et al., 2014).

In fact, firms can acquire business and institutional knowledge (Casillas & Moreno-Menéndez, 2014; Zhu, 2022) about the foreign market, as well as internationalization, through internationalization knowledge (Kogut & Zander, 1993). Diverse experiences facilitate the accumulation of valuable and rich knowledge at the organizational level that can be applied to different, novel contexts (Powell & Rhee, 2016). As experience accumulates, firm perceptions of risk regarding foreign businesses decrease, facilitating greater commitment to foreign markets (Pla-Barber & Escriba´-Esteve, 2006). Furthermore, the limitations of firm manager information processing abilities, induced by internationalization, hinder decision-making. Therefore, *a priori* experiential knowledge becomes the key to reducing uncertainty regarding commitment to

internationalization, such as in resource allocation (Himersson et al., 2017). Diverse international experiences help firms accumulate international experience, create organizational routines, and develop capabilities to operate foreign businesses (Yang et al., 2017).

In summary, owing to exposure to various foreign environments, a firm's diversity of international experience, represented by its official and unofficial management systems and operational experience tailored to each country's business, reduces its perceived risk regarding the uncertainty of internationalization, or increases its ability to effectively respond to the liability of foreignness (Li et al., 2015; Yang et al., 2017). This is likely to have a positive impact on the speed of foreign expansion.

H2: A firm's diversity of international experience will have a positive relationship with the speed of foreign expansion

IV. Sample and Data Collection

The sample of this study is 424 publicly listed firms on the KOSPI market in the manufacturing industry. The sample period spans 1999–2007, and to control the causality between the dependent and independent variables, we lagged all independent variables one year. Hence, the independent variables and control variables have data from 1999 to 2006, and the dependent variable includes data from 2000 to 2007.

This study collected data from KIS-VALUE, which is provided by NICE Information Service and Korea Listed Companies Association's TS2000 database (Lee & Yang, 2022). Furthermore, FDI variables such as firm foreign experience and internationalization speed, were collected from the Export-Import Bank of Korea's overseas investment statistics (Song, 2021). We collected supplementary information from DART provided by the Korean Financial Supervisory Service, which is a Korean electronic disclosure system, and each firms' homepage.

1. Measurement of Variables

1.1. Dependent Variable

The dependent variable in this research is the firm speed of foreign expansion, which refers to the execution speed of firm FDI. Speed of foreign expansion was measured by "*dividing the number of foreign subsidiaries by the number of years since the firm's first foreign expansion*" (Chetty et al., 2014, 640). Based on previous research, firm internationalization speed was measured by dividing the number of foreign subsidiaries that executed FDIs in a new country with the purpose of establishing a foreign subsidiary by the number of years since the firm's first FDI (Chang & Rhee, 2011; Chetty et al., 2014; García-García et al., 2017; Vermeulen & Barkema 2002). A higher internationalization speed signifies that the firm executed more FDIs over a specific period of time (Chang & Rhee, 2011; García-García et al., 2017).

1.2. Independent Variable

In this study, firm international experience, the independent variable, was assessed via the depth and diversity of international experience. Depth of international experience signifies the overseas business operation experience of a firm. It was measured by the number of years following a firm's first foreign expansion (Lin, 2012; Vermeulen & Barkema, 2002). The diversity of international experience signifies the extent of the regional scope in which a firm operates its overseas businesses (Zahra & George, 2002), and reflects the diversity of experiences it has accumulated in the foreign market (Casillas & Moreno-Menendez, 2014). Following previous research, the diversity of firm international experience was measured by the number of countries in which the firm executed an FDI (Casillas & Moreno-Menendez, 2014; Vermeulen & Barkema, 2002).

1.3. Control Variables

This study included seven control variables

that could affect firm speed of foreign expansion: firm size, firm age, debt ratio, research and development capability, marketing capability, firm performance during the previous year, and an industry dummy variable. Firm size was measured by the logarithmic transformation of the total number of employees in each firm, and it was controlled because firm size could influence internationalization speed (Casillas & Moreno-Menendez, 2014). The logarithm of the number of years from firm founding year until the year of measurement was used to assess firm age (Casillas & Moreno-Menendez, 2014). Debt ratio, a component of firm financial structure, can affect internationalization speed. Following previous research, the debt ratio was included as a control variable, and it was measured by dividing total debt by equity capital in this study (Choi & Park, 2022; Li & Tang, 2010). Firm competitive advantage, such as technological and marketing capabilities, increases the probability of rapid expansion into foreign markets to exploit the competitive advantage (Pla-Barber & Escriba´-Esteve, 2006; Liu et al., 2022). Thus, these capabilities are influencing factors for internationalization (Kotabe et al., 2002).This study included firm research and development capability, as well as marketing capability, as control variables. Firm research and development capability was measured by the proportion of research and development expenses relative to firm sales revenue. Marketing capability was assessed by dividing advertising expenditure by total sales revenue (Kotabe et al., 2002). Firm performance during the previous year is a factor that influences decision making on issues such as foreign expansion and research and development investments (Lin, 2012). Therefore, this study included return on equity (ROE) to control for firm performance during the previous year. Prior firm international experience impacts internationalization speed (Tang, 2019; Yang & Lee, 2022), and therefore, export intensity was included as a control variable (Yang et al., 2017; Won & Yang, 2021). Additionally, as internationalization speed can vary by industry (Lin, 2012), the division classification (the first

two digits) of the Korean Standard Industrial Classification (KSIC) was used for the industry dummy in the analysis, and a year dummy was included as well.

2. Analytical Approach

This study is an empirical analysis of the effect of the type of firm international experience on internationalization speed. The data used in this research take the form of panel data from 1999 to 2007, necessitating an appropriate estimation method. As the ordinary least squares (OLS) method is not a suitable estimation method for analyzing panel data, this study used generalized least squares (GLS) because it can resolve the problems of heteroskedasticity and autocorrelation that can exist in panel data.

Before conducting the GLS regression, a Hausman test was conducted to determine appropriate fixed- and random-effect models for the panel data linear regression. Estimations with both models revealed that the random-effect model was more efficient for this study. Consequently, in every step of the empirical analysis of this research, the random-effect model was utilized.

Table 1 presents the means, standard deviations, and correlations of the variables used in the analysis. Prior to conducting the panel data regression analysis, variance inflation factor (VIF) was verified to test for multicollinearity. The VIF value was smaller than 1.56; therefore, the model was considered free of multicollinearity issues, and the analysis was subsequently conducted.

The results of GLS regression analysis using STATA are presented in Table 2. Model 1 only includes control variables, and Model 2 includes all variables, including the control and independent variables. The estimation result of Model 1 reveals that firm size has a positive association with speed of foreign expansion, and firm age has a negative association with the dependent variable. This is in agreement with the results of previous research that stated that if a firm's size is large, there is an abundance of resources, and this can have a

Table 1. Descriptive Statistics and correlations

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1	0.84	0.67	1									
2	6.17	1.19	0.4048*	1								
3	3.30	0.70	-0.2707*	0.0342	1							
4	1.98	25.54	-0.0329	-0.0315	0.0045	1						
5	1.19	2.03	0.1471*	0.0746*	-0.1558*	-0.0259	1					
6	0.01	0.02	0.0677	0.1275*	0.0575*	-0.0141	0.1320*	1				
7	5.58	39.19	0.1619*	0.0454*	-0.0769*	-0.2573*	-0.0928*	0.0359	1			
8	28.80	29.13	0.1448*	0.2823*	-0.0521*	0.010	-0.0210	-0.3064*	-0.0366	1		
9	5.00	6.74	0.5914*	0.7126*	-0.0875	-0.014	0.1516*	-0.0052	0.1219*	0.3066*	1	
10	2.02	0.84	0.1080	0.3030*	0.0740*	-0.0307	-0.0928*	-0.0041	0.0199	0.1206*	0.4812*	1

Note: 1. Speed, 2. Firm size, 3. Firm age, 4. Debt ratio, 5. R&D capability, 6. Marketing capability, 7. Prior performance, 8. Prior international experience, 9. Depth of internationalization experience, 10. Diversity of internationalization experience.

positive influence on the firm's ability to rapidly expand overseas (Yildiz et al., 2012). Meanwhile, it was identified that firm age has a negative effect on speed of foreign expansion. Amidst the coexistence of two perspectives, the arguments on the relationship between firm age and firm learning (Casillas & Moreno-Menendez, 2014), this study was found to be consistent with the few studies that argued that firm age negatively impacts internationalization (Chang et al., 2012; Santoro et al., 2021). Meanwhile, marketing capability was found to have a positive association with the speed of foreign expansion, and this finding coincides with previous claims that marketing capability is an important influencing factor in foreign expansion (Kotabe et al., 2002).

Hypothesis 1 posited that firm depth of international experience will have a positive relationship with the speed of foreign expansion. The empirical analysis showed that a firm's depth of international experience had a significant negative relationship with internationalization

speed. Thus, Hypothesis 1 was not supported.

Hypothesis 2 posited that firm diversity of international experience will have a positive relationship with the speed of foreign expansion. The results revealed that a firm's diversity of international experience had a positive influence on internationalization speed (P<0.000). Thus, Hypothesis 2 was supported.

V. Conclusions and Implications

This study analyzed the effects of firm depth and diversity of international experience on speed of foreign expansion. The results of the empirical analysis conducted based on 424 listed Korean firms on the KOSPI market belonging to the manufacturing industry are as follows. First, the results showed that firm depth of international experience has a negative influence on speed of foreign expansion. This result is the opposite of the hypothesis of the study, and could imply that

Table 2. FGLS Model

Variables	Model 1	Model 2
Firm size	0.139*** (0.029)	0.083** (0.024)
Firm age	-0.238*** (0.049)	-0.135*** (0.034)
Debt ratio	-0.010 (0.063)	0.031 (0.039)
R&D capability	0.019 (0.017)	0.012 (0.012)
Marketing capability	10.153** (3.524)	12.079*** (2.525)
Prior performance (ROE)	0.007* (0.003)	0.002 (0.002)
Prior international experience	-0.002 (0.002)	0.001 (0.001)
Depth of international experience		-0.302*** (0.033)
Diversity of international experience		0.065*** (0.005)
Industry dummy	Included	Included
Year dummy	Included	Included
Intercept	0.441 (0.257)	0.377 (0.348)
Wald chi2	136.74	810.62
Prob > chi2	0.000	0.000

Note: Robust standard errors are in parentheses; *$p<0.05$, **$p<0.01$, ***$p<0.001$.

when a firm operates in a certain country for an extended duration, it is an indication that level of commitment to that country has increased, which could hinder rapid expansion in another country. Alternatively, if a firm operates a business in a specific country for a long period, it becomes familiar with that country's market and institutions. Thus, it can accumulate business and institutional knowledge through local customers and the networks it has established with suppliers

and local partners (Casillas & Moreno-Menéndez, 2014). However, these types of knowledge have the characteristic of being bound to that specific country; they cannot be directly transferred to the context of another country (Casillas & Moreno-Menéndez, 2014; Chetty et al., 2006). Thus, they may not be of significant value to a firm that pursues foreign expansion at high speed through the deployment of several employees qualified to conduct international business activities and

the expenditure of financial resources over a certain period of time (Chetty et al., 2014). These investments naturally result in a high level of commitment to the international market compared to a firm that pursues internationalization at a relatively slower pace. This suggests the need for more in-depth future research that considers various external factors that this study did not include. For example, a firm's internal capabilities, ownership structure, and impact of the countries where the firm has invested can be included.

Second, this study showed that a firm's diversity of international experience has a positive effect on its speed of foreign expansion. This result indicates that, by being exposed to various national environments worldwide, a firm's diverse international experience, represented by its official and unofficial management systems and operational experience matched to its business in each country, decreases its perceived risk of uncertainty of internationalization, or enhances its ability to effectively respond to the liability of foreignness (Li et al., 2015; Yang et al., 2017), thus positively affecting the speed of foreign expansion. This study contributes existing research by investigating the impact of the different types of international experiences of a firm on its speed of foreign expansion. In the past, a few studies have attempted to determine the factors that affect speed of foreign expansion. However, there have not been many attempts to empirically analyze the impact on speed of foreign expansion by categorizing firm experience, especially in the Korean context. In this regard, this study provides a meaningful contribution in that it seperated the different types international experience and empirically tested the impact on speed of foreign expansion. Further, this study incorporated multi-dimension speed measures as the dependent variable in examining the types of international experience on the speed of foreign expansion. Therefore, this study enriches studies on international speed.

This study may provide the following practical and managerial implications. The depth of international experience contains experiences learned through repeated experiences in one country, and may be characterized as 'repetition-based experience', while thre diversity of international experience may be characterized as 'diversity-based experience' reflecting various experiences in various countries. (Li et al., 2021). Long-term experience in one country is important, but the firms seeking to expand into various national markets also need to gain experience in various countries. In fact, previous research has shown that general knowledge gained through operations in various markets has a significant impact on strategic decisions regarding changes to a firm's entry mode (Putzhammer et al, 2020). Therefore, managers of firms aiming to speed up overseas expansion need to remember that it may be important to create many opportunities for firms to learn by being exposed to internationalization experiences in various fields (Chetty et al., 2014).

This research has the following limitations. First, this study focused only on the direct influence of the type of international experience of a firm among the factors that can affect the speed of foreign expansion. Therefore, future research should consider other factors affecting the speed of foreign expansion as mediators and/or moderators. For instance, future studies should consider corporate factors with country-level determining factors, such as national or institutional factors that could affect the speed of foreign expansion, or executive level influence, such as entrepreneur network or inclination. Second, the sample of this research covers a short time period: 1999 – 2007. Future studies should conduct empirical analyses with samples that cover a longer duration. Third, this study did not consider entry modes or ownership stakes, which could impact the speed of foreign expansion. Fourth, because this research focuses exclusively on the manufacturing industry, it is difficult to generalize the study's results to other industries. In particular, the service industry and the recently emerging e-commerce industry pursue a form of internationalization different from the manufacturing industry. Therefore, future research should explore the speed of foreign expansion based on these industries.

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Structural Understanding of Influencer Worship in Social Media: The Formation and Consequences of Influencer Power*

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ABSTRACT

Purpose – Influencer marketing has emerged as a prominent trend in marketing, with marketers utilizing influencer endorsements to promote and sell products. The phenomenon of influencer worship has been identified as an individual's obsession with social media influencers, who have become role models capable of influencing online consumer attitudes and behaviors. However, empirical research on influencer worship is still limited, with existing academic papers primarily focused on social media platforms rather than the evolving significance of influencers. Our study proposes a conceptual model and hypotheses to address this research gap.

Design/Methodology/Approach – An online questionnaire was developed as the research instrument. Then, using an information acceleration method, samples were selected, and 570 respondents in Korea were included in the statistical analysis. Given the early stage of research on influencer worship, partial least squares (PLS) analysis was considered an appropriate statistical approach.

Findings – Based on the result, the model suggests that perceived influencer utilitarian, hedonic, and social values were positively associated with trust and commitment, which in turn, influenced influencer worship. Ultimately, influencer worship affects endorsed brand attitude and willingness to share reviews.

Research Implications – This study is among the initial attempts to investigate the significance of influencer worship, and it contributes to academic findings and practices by highlighting the role of influencers in online marketing.

Keywords: commitment, influencer, parasocial relationship, perceived value, social media, trust, worship
JEL Classifications: M10. M12, M30, M31, M37

I. Introduction

Social media is changing how people create, experience, and share content (Khan & Vong, 2014), and has given rise to social media influencers that have become primary facilitators of consumer decision-making. Social media influencer endorsements are effective for marketers to promote products, services, and brands (Schouten et al., 2020). The widespread use of social media and influencers has expanded the reach of word-of-mouth marketing, and strengthened the impact of peer influence. As online influencers gain fame and public attention, online and offline channels and businesses are establishing partnerships with these influencers to promote brands and products.

Social media influencers are individuals that share valuable content on the Internet to attract followers and shape the attitudes and behaviors of other users (Zhang & Choi, 2022). Given the superior outcomes compared to traditional marketing activities such as mass media advertising, companies express high satisfaction with marketing tactics using online influencers. Consequently, influencer marketing is poised to replace conventional marketing and advertising (Dehghani et al., 2016). One promising area of social media research that warrants further attention is consumption through online influencers, new third-party endorsers that shape consumer attitudes through various social media forms (Lee et al., 2021; Perera et al., 2018). To successfully engage in influencer marketing, companies must understand the characteristics of influencers and choose influencers that are well-liked and admired by customers. In addition, influencers must possess qualities that consumers are willing to trust, and the greater the number of followers, the faster and more widely distributed the information and content on products (Lu & Fand, 2017). Although the number of followers typically determines influencer social power, influence results from more complex consumer psychological mechanisms.

The proliferation of social media influencers is undeniable, yet the understanding of the impact remains limited. The effectiveness of influencer marketing has been a growing interest among practitioners and academics in recent years (Farivar et al., 2021; Jin et al., 2019; Schouten et al., 2020). Despite this heightened interest, the existing literature on influencers is limited, and has largely focused on social media platforms without considering influencers as a distinct form of media. Moreover, businesses must remember that influencers constantly change platforms for greater profitability. This highlights the need for businesses to stay vigilant and adaptable in influencer marketing strategies. As a result, the dominance of online media is waning, so research on influencers is becoming more important than media research. The lack of research examining how companies can effectively leverage influencers as commercial communication tools is a considerable threat in this context. To fill this research gap, we examine how influencer value factors impact the follower commitment, trust, and worship of influencers. Worship motives, and parasocial relationships shape the psychological bond between consumers and influencers (Dissanayake, 2015). We emphasize the significance of influencer worship in generating desirable marketing outcomes such as the conversion of followers, strongly endorsed brand attitude, and willingness to share reviews with peers.

II. Theoretical Background

1. Influencer Marketing

In recent years, social media influencers, including bloggers, YouTubers, and content creators, have gained recognition as skilled connectors capable of reaching audiences through the Internet. Influencers, as defined by Keller and Berry (2003), are individuals with a significant social network that have the potential to influence others based on their attributes, such as personal charisma, communication frequency,

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persuasiveness, or network size. The emergence of Internet influencers has profoundly impacted corporate marketing strategies. Businesses are becoming increasingly aware that influencer marketing is more effective than traditional marketing practices. Studies have indicated that social media influencers offer better results than traditional marketing activities. The relationship between influencers and followers is a key factor in the effectiveness of influencer marketing (Farivar et al., 2021). Influencers have built a loyal following on social media by providing valuable content and forming personal connections with their audience, making followers more likely to trust their recommendations, and therefore be more receptive to promoted products and services.

Additionally, influencer marketing offers broader reach than traditional marketing activities. With billions of users on social media platforms, influencers can reach millions with a single post. Moreover, influencer marketing provides authenticity that traditional marketing activities have difficulty achieving (Glucksman, 2017). As consumers are becoming more discerning and able to recognize traditional marketing tactics, the effectiveness of these methods has declined. In contrast, influencer marketing is often viewed as a form of word-of-mouth recommendation, which consumers trust. Traditionally, marketing activities allocated a large budget to mass promotion and advertising campaigns, even though the most potent information used for decision-making is derived from consumer trust and belief (Bughin et al., 2010). Nowadays, word of mouth has received more attention than before, as it is a critical concept that describes the communication process that consumers exchange about specific products or services or the characteristics of the providers they have used. Westbrook (1987) describes word of mouth as informal communication about experiences that consumers have with a product or service. In today's context, consumers trust friends and acquaintances more than other formal sources of information from the seller, and sales result from effective word-of-mouth

sharing. The importance of the message source as the sender of commercial information is widely acknowledged. The persuasiveness of advertising is strongly influenced by consumer perceptions of the message source (Wilson & Sherrell, 1993). As people increasingly spend more time on social media platforms such as Instagram, Facebook, and YouTube, it is natural for social media influencers to be considered reliable sources of product recommendations and purchase information. Jin et al. (2019) argued that consumers exposed to Instagram influencer brand posts perceive the source as more trustworthy, and show a more positive attitude toward the brand because social media influencers are perceived to be similar to regular consumers. Advertising endorsers may serve as role models in consumer identity formation (Lloyd, 2002) and develop a parasocial interaction (PSI) with said consumers. PSI refers to the relationships consumers develop with media characters, making them an essential source of information (Rubin et al., 1985). The marketing value of social media influencers can also be understood through the meaning transfer model, which explains how influencers add value to an endorsed brand or product. Influencers could add value to the brand because the brand or product presumably possesses the influencer's symbolic power (McCracken, 1986).

Unlike in the past, influencers have realized they can generate significant profits by leveraging influence. YouTube, for example, is a popular social medium with a substantial effect on the consciousness and perceptions of its users, and serves as an effective marketing tool. Advertisements on YouTube can take the form of multimedia, such as text, images, and videos, and are paid for by Google. As a result, the creators of YouTube content gain 55% of the fee the advertiser paid for the advertising based on the CPC (cost per click) or CPM (cost per mille) budget model (Zavodna & Pospisil, 2017). Furthermore, influencers have enjoyed opportunities to earn additional revenue or receive products for free by promoting new products or sponsoring PPL (product placement) advertisements. As a result,

influencers are economically motivated to engage in more diverse and influential online activities, and have evolved to arouse more interest from followers. Additionally, each influencer has transformed into a personal brand, and to create more professional content, many have hired photographers and makeup artists, and become affiliated with professional agencies such as MCN (multi-channel network) companies. As a result, the position of influencers in the marketing ecosystem will continue to grow.

2. Perceived Value toward Influencers

Perceived value has been widely adopted as a theoretical framework in consumer research (Holbrook, 1994; Noble et al., 2005). Within this framework, consumers are viewed as value maximizers that evaluate the costs and benefits of market offerings in terms of underlying benefits and costs. This concept is also genuine for online influencers, because consumers select influencers that offer the most outstanding value. Consequently, social media marketers must focus on the values that encourage consumers to engage with influencers.

Perceived value refers to a consumer's evaluation of the utility of a product or service based on the perception of what is given and received (Zeithaml, 1988). Therefore, consumers that worship an influencer will be influenced by the values they perceive from the influencer. Prior research has demonstrated that hedonic and utilitarian values are the most significant and essential dimensions of consumer value (Evelina et al., 2020; Hu et al., 2014; Kesari & Altukar, 2016). Hedonic value is based on pleasurable experiences, and pleasure and is more subjective than other values, significantly influencing satisfaction (Hanzaee & Rezaeyeh, 2013). Utilitarian value is also important in understanding the decision-making process of online consumers, as it is dominantly instrumental and functional (Noble et al., 2005). Therefore, consumers that make purchase decisions by considering utilitarian value tend to be more

objective in evaluating a product (Kesari & Altukar, 2016).

Consumer value classification is primarily based on the general dichotomization of hedonic and utilitarian values (Noble et al., 2005). However, previous research on perceived value has indicated that the social dimension of consumer value is also significant, especially in online consumer behavior research (Evelina et al., 2020; Rintamäki, 2006; Wu et al., 2018). Social value refers to the benefit of fulfilling desires in gaining recognition or social relationships, and it plays a critical role in promoting social influence (Hu et al., 2014). Social influence is a perceived change in an individual's mindset, feelings, and attitudes that arises from the interaction between an individual or group. The success of influencers does not solely stem from delivering valuable information but also from parasocial relationships. Successful influencers make consumers feel personally connected to the influencer, and perceived of as close friends (Lee et al., 2021). Therefore, considering social value is essential for a more comprehensive understanding of the value consumers perceive regarding influencers.

3. Influencer Worship Behavior

Celebrity endorsement has been a common commercial practice justified within branding and advertising (Vaikunthavasan, 2017). The effectiveness of celebrity endorsement has been attributed to its ability to transfer meaning from celebrities to brands, influencing consumer evaluations (Dissanayake & Ismail, 2015). This meaning transfer process occurs in three stages, with recognized celebrity personality traits gaining symbolic meaning in the social context in the first stage, these symbolic meanings being transferred to products when celebrities appear with them in the second stage, and consumers reshaping their self-images by purchasing products that carry these symbolic meanings in the third stage (Fowler et al., 2017; Li et al., 2022).

With the rise of online media, celebrity endorsement is increasingly being replaced by

endorsement by online influencers. In addition to traditional celebrities, companies are now turning to online influencers, such as vloggers, Youtubers, and '*Instafamous*' individuals, to endorse products (Marwick, 2015). While there are similarities between celebrities and influencers, there are also notable differences. Unlike traditional celebrities that have gained fame and public recognition through professional talent, online influencers have become famous by branding themselves as experts on social media platforms (Shouten et al., 2020). These online figures have built large followings by sharing user-created content on the public's preferred topics, such as food, beauty, fashion, and games (Lin et al., 2018). Furthermore, followers of online influencers can communicate frequently through social media and the Internet, which creates a strong psychological bond between the two.

Influencer worship often characterizes the strong bond between influencers and followers on social media, which involves follower obsession and identification with a particular influencer (McCutcheon et al., 2002; Huang, 2014). Influencer worship is characterized by a delusional disorder in which a person believes that the influencer is in love with them (McCutcheon et al., 2002). In addition, influencer worship invites sticky and wishful identification of followers with an online influencer due to the role modeling effect (Hu et al., 2020). A role model is an individual perceived as exemplary and worthy of imitation, which plays a vital role in follower learning processes and participation intentions (Cheung, 2020). Followers that view online influencers as role models will likely listen to them, sympathize with their product reviews, and purchase recommended products. Worship motives also influence brand evaluations and related behaviors (Huang, 2014). According to previous research, individuals that are absorbed in and follow influencer lives are motivated by compulsive buying, materialism, and poor mental integrity (Maltby et al., 2004; Reeves et al., 2012). In the absorption-addiction model, individuals with psychological deficiencies rely on influencers to satisfy inadequacies, enhance identity, and construct a more stable self-concept by associating with famous influencers. Influencer worshipers actively seek more private and official information from influencers, and even purchase the products they endorse (Lee et al., 2021). In many cases, a high level of interest and participation in influencer-related activities serves as external gratification (Reeves et al., 2012).

Interestingly, part of worship behavior is driven by FOMO (fear of missing out), which is a pervasive apprehension that others might be having rewarding experiences from which one is absent (Lee et al., 2021). FOMO arises from deficits in follower psychological needs that lead to preoccupation with constantly knowing what others are doing (Przybylski et al., 2013). As a result, online consumers visit social media more often to avoid FOMO, and follow influencers more actively (Hunt et al., 2018).

III. Hypothesis

1. Research Framework

This chapter proposes hypotheses to understand the influence of social media influencers on followers by applying the dual-path model. The dual-path model of reasoning is a framework that explains how people make decisions by considering both rational and emotional pathways. Several research studies have used the dual-path model to explore how emotions and cognition interact in different domains, such as consumer behavior, political attitudes, and moral judgment (Badrinarayanan et al., 2014; Sierra et al., 2015). In this study, the hedonic value represents emotional characteristics, and the utilitarian value represents rational characteristics. However, modeling only these values as antecedents may not fully explain the critical variance in online consumer behavior (Lester, 2011). To enhance the explanatory power of the framework, the perceived social value is added to the dual-process model. Figure 1 depicts the research framework.

Fig. 1. Research Framework
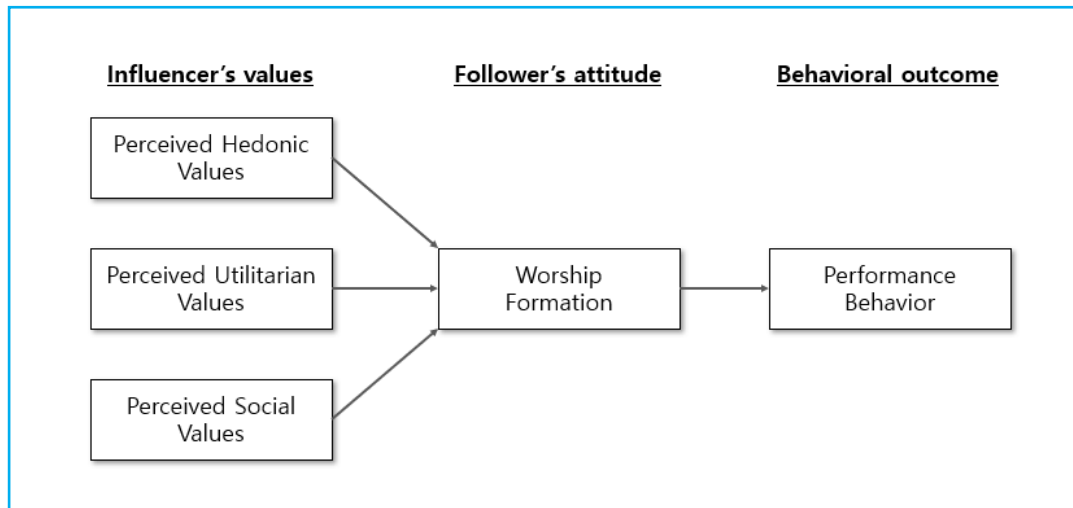
Source: compiled by author.

2. Perceived Value and Hypothesis

In recent years, a growing body of research has examined the relationship between novelty and commitment in the context of social media influencers. Zhang and Choi (2022) found that perceived the novelty of influencer content positively affected consumer commitment to an influencer. Similarly, Casaló et al. (2021) demonstrated that the perceived novelty of influencer content positively influenced follower continuance commitment to the influencer. These findings are consistent with the self-expansion theory, which posits that individuals seek self-expansion and growth in relationships (Aron & Aron, 1986; Aron et al., 2000). Furthermore, novel social relationships in particular are linked to higher relationship quality (Rosa et al., 2019). Therefore, we propose the following hypothesis.

H1: Novelty (*NOVEL*) has a positive influence on commitment to an influencer (*COMIT*).

According to McGuire (1985), media sources that the consumer favors are more likely to be seen as attractive and persuasive. Attractive advertising sources can lead to greater consumer identification with the message source, increasing the possibility that they will adopt the source's beliefs and attitudes (Basil, 1996). For instance, a study by Masuda et al. (2022) found that the perceived physical attractiveness of an influencer positively affected follower attitudes toward the influencer and the intention to continue following the influencer. Therefore, we propose the following hypothesis.

H2: Attractiveness (*ATRAC*) has a positive influence on commitment to an influencer (*COMIT*).

Enjoyment positively influences intention to follow social media influencers (Kim & Baek, 2022). Moreover, previous research on parasocial interaction (PSI) in various online contexts has shown that overall enjoyment can predict individual commitment to online influencers. Tussyadiah and Fesenmaier (2009) and Wulf et al. (2021) argued that enjoyable online videos, video games, and Twitch streamers can affect the imagination of audiences, and consequently motivate action in the real world. Therefore, we propose the following hypothesis.

H3: Enjoyment (*ENJOY*) has a positive influence on commitment to an influencer (*COMIT*).

The use of influencers as a marketing strategy has increased, with many companies leveraging popularity to promote products and services. One crucial determinant of the success of influencer marketing is the perceived level of expertise of an influencer. Chetioui et al. (2020) investigated factors that influence consumer trust in social media influencers, and found that perceived expertise significantly impacted trust in influencers. Social media influencers with higher levels of expertise are perceived as more credible, trustworthy, and persuasive. Other research has also examined the influence of expertise on consumer attitude, demonstrating that an endorser with expertise can shape consumer perceptions of product quality, and be perceived as a competent spokesperson for the endorsed brand (Kim & Choi, 2012). Moreover, Schouten et al. (2020) contended that perceived expertise led to a more favorable attitude toward the information source. Therefore, we propose the following hypothesis.

H4: Expertise (*XPERT*) has a positive influence on influencer trust (*TRUST*).

Reciprocal communication, the exchange of information and feedback between the influencer and the audience, is a key factor in building trust in social media marketing (Jiang et al., 2010). Research by Liu and Shrum (2002) indicates that reciprocal communication positively affects consumer behavior. Brands that engage in interactive communication with followers on social media were found to be more trusted than those that did not. This previous research suggests that reciprocal communication is an effective way to foster consumer trust. Therefore, we propose the following hypothesis.

H5: Reciprocal communication (*COMMO*) has a positive influence on influencer trust (*TRUST*).

Psychological distance, precisely social distance, is crucial in online consumer decision-making. Cui et al. (2020) emphasized the significant role of psychological distance in building trust in mobile commerce. While psychological distance challenges consumer trust and the continuity of ongoing relationships, psychological proximity promotes trust and long-term relationships (Harwood & Lin, 2000). In social media, perceived closeness to a brand's page has been found to be positively related to trust in the brand (Tsai & Men, 2013). Consumers that feel a sense of closeness to a brand are more likely to trust the brand. This finding supports the hypothesis that closeness positively influences influencer trust. Therefore, we propose the following hypothesis.

H6: Closeness (*CLOSE*) has a positive influence on influencer trust (*TRUST*).

Consumers are increasingly emphasizing the quality of services and the social values of providers, including morality and social responsibility. The concept of morality has been extensively studied in advertising and marketing. Lee and Johnson (2017) found that consumers perceived advertisements emphasizing moral values, such as honesty and fairness, as more trustworthy. Likewise, Baumeister et al. (2018) discovered that influencers that highlighted moral values were perceived as more trustworthy by followers on social media. These results support the hypothesis that morality positively impacts influencer trust. Therefore, we propose the following hypothesis.

H7: Morality (*MORAL*) has a positive influence on influencer trust (*TRUST*).

3. Worship and Behavior

Influencer worship, which reflects the degree of adoration and admiration that individuals feel for influencers, is an important concept in social media marketing because it reflects the degree of influence that influencers have on

consumer behavior. Recent research has shown that commitment to an influencer can positively influence influencer worship (Dinh & Lee, 2022). Lee et al. (2022) found that commitment to an influencer was positively associated with the degree of adoration and admiration that individuals felt for the influencer in a study of Instagram users. According to SCT (self-categorization theory), individuals can behave according to social identity processes, distinct from their unique personal identity (Trepte & Loy, 2017). Also, the role model effect suggests that people are inclined to regard identified individuals as social referents, and change their values and attitudes according to these referents (Wang et al., 2016). The effect also implies that follower commitment and identification with influencers can produce sustainable and long-term stickiness for an online influencer (Hu et al., 2020). Therefore, we propose the following hypothesis.

H8: Commitment to an influencer (*COMIT*) has a positive influence on influencer worship (*WORSP*).

Prior research has demonstrated the critical role of trust in shaping consumer attitudes and behaviors toward influencers, including the tendency to engage in worship behavior. For example, Gomes et al. (2022) found that consumer perceptions of an influencer's trustworthiness positively influenced intention to follow the influencer's recommendations. Additionally, the source credibility model emphasizes the importance of trustworthiness for successful influencer endorsement (Ohanian, 1990). Therefore, we propose the following hypothesis.

H9: Trust (*TRUST*) has a positive influence on influencer worship (*WORSP*).

Prior research has suggested that trust in an influencer is critical in cultivating consumer commitment. Specifically, trust serves as a precursor to commitment, as consumers are unlikely to engage in behavior that requires

sacrifice unless trust has been established (Hsu et al., 2010). Furthermore, recent studies have demonstrated that influencer trust positively affects follower engagement in social media marketing (Atiq et al., 2022). Therefore, we propose the following hypothesis.

H10: Trust (*TRUST*) has a positive influence on commitment to an influencer (*COMIT*).

In the context of influencer marketing, the impact of influencer worship on consumer attitudes toward endorsed brands has garnered attention from researchers. Previous research in the domain of online celebrity suggests that worship motives based on admiration can positively influence brand evaluation (Huang, 2014). Furthermore, according to the source attractiveness model, message sources liked and known by consumers are more persuasive, increasing the likelihood that consumers will adopt said source's beliefs and behaviors (Basil, 1996). In their study, Lee et al. (2022) found that influencer worship significantly predicted consumer positive brand attitudes. Therefore, we propose the following hypothesis.

H11: Influencer worship (*WORSP*) has a positive influence on endorsed brand attitude (*BRAND*).

Social media platforms have become a primary source of knowledge sharing and information seeking among users (Felix et al., 2017). Khan (2017) highlighted that reading other viewer comments is an essential motivation for YouTube users. Furthermore, online users can connect with like-minded individuals and follow opinion leaders or influencers that significantly impact their decisions (Zavodna & Pospisil, 2017). Consequently, consumers attempt to communicate the opinions of the influencers they admire to others whenever possible. Lee et al. (2022) studied the effects of authenticity, consumerism, inspiration, and envy on consumer behavioral changes. The findings suggest that influencer worship, source expertise, and social influence

significantly predict consumer willingness to share a review. Therefore, we propose the following hypothesis.

H12: Influencer worship (*WORSP*) has a positive influence on willingness to share a review (*SHARE*).

IV. Methodology and Result

1. Data Collection and Sample

For data collection, an online survey was created using Google Forms. The survey contained questions about respondent demographic information, including age and gender, and social media usage behavior. In July 2022, an e-mail containing a link to the survey site was sent to college students for two weeks. The college student group was selected due to its high technology adoption rate and heavy social media usage. However, there was the potential for common method variance (CMV) to distort the relationships between constructs in the questionnaire (Rodriguez-Ardura & Meseguera-Artola, 2020). To address this issue, we used several preventive remedies, such as making the question wording clear and concise, performing a pretest, shuffling question order, and including reverse scale items to detect extreme and acquiescence response styles (Baumgartner & Steenkamp, 2001).

A total of 570 Korean respondents completed the survey, after 51 respondents that did not know any influencers were excluded. The average age of the respondents was 21.9 years, 43.7% were male, and 56.3% were female. All respondents had at least one interaction experience with an influencer, with 60.7% reporting that they had influencers they liked, and 39.3% indicating that they knew influencers well, although they did not have a favorite. Among social media platforms, 75.1% of respondents selected YouTube, 12.3% chose Instagram, 6.0% picked AfreecaTV, 2.5% selected Twitch, and 4.25% selected others. On average, respondents spent 3.19 hours on social media per day.

2. Construct and Measurement

Questionnaire items were borrowed from previous studies to secure initial validity. Then, as a subsequent phase, a set of constructs and items was submitted to two marketing academics to test face validity. The resulting constructs, variable definitions, and measurement items are presented in Table 1.

Table 1. Constructs and Items

Construct (Source)	Operational Definition & Item
Novelty (Cox & Cox, 2002)	"The level that an influencer is fresh and distinctive (NOVEL)". The influencer is new. The influencer is original. The influencer is unusual. The influencer is typical (*r).
Attractiveness (Ohanian, 1990)	"The level that an influencer is attractive physically or emotionally (ATRAC)". The influencer has physical beauty. The influencer has chicness. The influencer has elegance.
Enjoyment (Domina et al., 2012)	"The level that an influencer is enjoyable (ENJOY)". I find the influencer to be enjoyable. I find the influencer to be exciting. I find the influencer to be interesting.

Closeness to Influencer (Huang et al., 2015)	"The level that a follower likes the influencer and would like to interact with him/her (CLOSE)". I feel like I am personally similar to the influencer. The influencer and I have many things in common. As a friend, I like the influencer. The influencer is the kind of person I would like as a roommate. The influencer is someone I would like to be closer to. The influencer is the kind of person I would like to know better.
Morality (Fisher & Ma, 2014)	"The level that an influencer is innocent and wholesome (MORAL)". The influencer is pure. The influencer is innocent. The influencer is wholesome. The influencer is not good (*r).
Expertise (Ohanian, 1990)	"The level that an influencer is a source of valid assertions (XPERT)". The influencer has competence with regard to the brand. The influencer has expertise with regard to the brand. The influencer has qualifications with regard to the brand.
Reciprocal Communication (Jiang et al., 2010)	"The level that a follower perceives responsiveness and connection by following an influencer (COMMO)". The influencer facilitates two-way communication. The influencer makes me feel like he/she wants to listen. The influencer enables conversations with followers.
Commitment to Influencer (Badrinarayanan et al., 2014)	"The level that a follower has a sense of belonging and attachment to an influencer (COMIT)". I have a sense of belonging to the influencer. I have a psychological attachment to the influencer. I think that exchanging opinions with the influencer is important.
Trust (Ohanian, 1990)	"The level that an influencer tries to have a trustworthy relationship with his followers (TRUST)"
Influencer Worship (Huang, 2014)	"The level of a follower's enjoyment of an influencer and identification with him/her (WORSP)". I enjoy watching or listening to the influencer. My friends and I like to discuss what the influencer has done.
Endorsed Brand Attitude (Huang, 2014)	"The level of a follower's confidence in a brand that has been endorsed by a particular influencer and willingness to buy the product (BRAND)". I am confident in the brands endorsed by the influencer. I think the brands endorsed by the influencer have taste. I am willing to buy the brands endorsed by the influencer.
Willingness to Share a Review (Jin & Phua, 2014)	"The level of a follower's interest and willingness to spread information about a particular review to his online peers (SHARE)". I am interested in sharing this review with my online friends. I am interested in sharing my experience with this advertisement with my online friends. I am willing to spread the review via my social media page.

Evaluating the fundamental reliability and validity of measurement items and constructs is necessary. The measures of internal consistency are Cronbach's alpha, composite reliability, and average variance extracted (AVE). The recommended standard for Cronbach's alpha and composite reliability is above 0.7. As presented in Table 2, both the construct's alpha and composite reliability coefficients meet the required criteria. Moreover, the AVE scores also meet the acceptable criteria.

Table 2. Internal Consistency Test

Construct	Cronbach's Alpha	Composite Reliability	AVE
ATRAC	0.738	0.853	0.660
BRAND	0.897	0.936	0.830
CLOSE	0.871	0.902	0.608
COMIT	0.924	0.952	0.868
COMMO	0.789	0.876	0.702
ENJOY	0.922	0.950	0.864
MORAL	0.839	0.893	0.678
NOVEL	0.814	0.878	0.643
SHARE	0.963	0.976	0.932
TRUST	0.923	0.952	0.868
WORSP	0.723	0.842	0.640
XPERT	0.871	0.921	0.795

Exploratory factor analyses were performed to test the validity of the constructs. Each factor analysis used the principal component analysis option with VARIMAX rotation. In the test for exogenous variables, seven factors in Table 3 explaining 71.641% of total variance were extracted, as expected. Five factors in Table 4 explaining 86.109% of the total variance were extracted as expected in the additional test for endogenous variables.

Table 3. Factor Analysis: Exogenous Variables

Item	CLOSE	ENJOY	MORAL	NOVEL	XPERT	COMMO	ATRAC
i5	0.776	0.245	0.165	0.107	0.111	0.004	0.156
i3	0.772	0.098	0.156	0.113	-0.018	0.223	-0.058
i4	0.750	0.125	0.130	0.132	0.055	-0.021	0.234
i2	0.713	0.026	0.080	0.042	0.006	0.185	-0.030
i6	0.691	0.274	0.213	0.146	0.032	0.076	0.191
i1	0.666	0.068	0.168	0.030	-0.084	0.373	-0.126
c1	0.202	0.844	0.172	0.170	0.046	0.152	0.098
c2	0.207	0.838	0.181	0.167	0.066	0.164	0.047
c3	0.188	0.833	0.147	0.170	0.177	0.096	0.115
j3	0.204	0.171	0.828	0.018	0.162	0.082	0.010
j1	0.193	0.119	0.801	0.108	0.036	0.125	0.098
j4	0.194	0.220	0.770	0.119	0.136	0.140	0.100
j2	0.145	0.065	0.617	0.115	0.024	0.245	0.171
b2	0.106	0.206	0.100	0.838	0.046	0.050	-0.135
b3	0.088	0.088	0.029	0.784	-0.040	0.031	0.225
b1	0.097	0.255	0.137	0.740	0.127	0.059	-0.140
b4	0.135	0.023	0.075	0.717	0.030	0.103	0.235
f2	-0.011	0.112	0.068	0.023	0.897	0.114	0.030
f3	0.090	0.067	0.083	0.013	0.857	0.101	0.045
f1	-0.021	0.085	0.122	0.089	0.856	0.086	0.069
h3	0.224	0.110	0.150	0.099	0.116	0.764	0.033
h2	0.337	0.022	0.209	0.050	0.067	0.763	0.070
h1	0.051	0.289	0.184	0.088	0.236	0.709	0.074
a3	0.069	0.003	0.084	0.002	0.001	0.109	0.847
a2	0.121	0.383	0.260	0.126	0.190	-0.008	0.650
a1	0.120	0.497	0.171	0.285	0.125	0.013	0.520
Eigen Value	3.702	3.001	2.800	2.695	2.526	2.119	1.784
Variance %	14.237	11.541	10.77	10.366	9.717	8.151	6.86
Total Variance %			71.641%				

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Table 4. Factor Analysis: Endogenous Variables

Item/Construct	SHARE	TRUST	COMIT	BRAND	WORSP
r2	.912	.106	.235	.199	.096
r3	.901	.122	.202	.200	.113
r1	.899	.127	.199	.226	.106
g2	.129	.903	.132	.233	.124
g1	.137	.897	.122	.246	.089
g3	.075	.825	.118	.215	.178
m2	.173	.096	.905	.087	.178
m3	.223	.143	.866	.138	.144
m1	.209	.135	.862	.089	.196
q2	.209	.270	.090	.849	.110
q3	.199	.154	.123	.843	.055
q1	.208	.332	.101	.825	.107
o1	.038	.273	.162	.160	.811
o2	.225	.068	.312	.050	.778
Eigen Value	2.794	2.676	2.651	2.466	1.469
Variance %	19.955	19.117	18.933	17.613	10.491
Total Variance %			86.109%		

The Fornell and Larcker criterion was employed to test for discriminant validity, which suggests that discriminant validity exists when the square root of the average variance extracted (AVE) of a construct is greater than its correlation with other constructs (Fornell & Larcker, 1981). Results show that the AVE of each construct was greater than its correlations with other constructs, as presented in Table 5. For instance, the AVE of the COMMO construct is 0.838, which is higher than its correlations with other constructs (ranging from 0.253 to 0.479), thus indicating discriminant validity. The same pattern is observed for other constructs in Table 5.

Table 5. Fornell & Larcker Test

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) ATRAC	0.812											
(2) BRAND	0.282	0.911										
(3) CLOSE	0.336	0.332	0.779									
(4) COMIT	0.248	0.315	0.740	0.932								
(5) COMMO	0.269	0.311	0.479	0.458	0.838							
(6) ENJOY	0.499	0.377	0.461	0.360	0.400	0.930						
(7) MORAL	0.416	0.426	0.483	0.422	0.472	0.450	0.823					
(8) NOVEL	0.322	0.196	0.318	0.248	0.253	0.414	0.288	0.802				
(9) SHARE	0.254	0.478	0.406	0.472	0.311	0.286	0.301	0.219	0.965			
(10) TRUST	0.371	0.551	0.386	0.330	0.452	0.490	0.602	0.257	0.327	0.932		
(11) WORSP	0.333	0.325	0.566	0.503	0.349	0.546	0.417	0.309	0.354	0.398	0.864	
(12) XPERT	0.247	0.470	0.113	0.128	0.304	0.252	0.261	0.140	0.233	0.550	0.207	0.891

3. Hypothesis Test

A PLS (partial least squares) analysis was conducted to test the causal model and was used to identify the relationships between constructs, given the relative newness of the research topic and lack of prior theory for the research topic (Woo et al., 2014). Also, PLS is considered appropriate to test complex relationships, and is an appropriate method to test in new research areas to handle collinearity (Dash & Paul, 2021). After ensuring reliability and conducting factor analysis, a bootstrapping sampling method tests the hypothesized paths. The results in Table 6 and Figure 2 demonstrate that every hypothesis, except H2, was accepted at a significance level of 0.05. Additionally, an r^2 analysis indicates that the research model explains substantial variance, with *COMIT*, *TRUST*, *WORSP*, *BRAND*, and *SHARE* having r^2 values (adjusted r^2) of 0.180 (0.175), 0.552 (0.549), 0.315 (0.313), 0.109 (0.108), and 0.125 (0.124), respectively. Finally, discriminant validity was verified using Fornell and Larcker's test, and the results indicate that it was established (Fornell & Larcker, 1981).

Table 6. Hypothesis Test

Hypothesis	Path Coefficient	S.D.	t-value	p-value (*<0.05)
H1. NOVEL → COMIT	0.098	0.046	2.145	0.032*
H2. ATRAC → COMIT	0.042	0.056	0.762	0.447
H3. ENJOY → COMIT	0.222	0.050	4.407	0.000*
H4. CLOSE → TRUST	0.131	0.038	3.448	0.001*
H5. MORAL → TRUST	0.394	0.041	9.512	0.000*
H6. XPERT → TRUST	0.392	0.032	12.361	0.000*
H7. COMMO → TRUST	0.094	0.040	2.331	0.020*
H8. COMIT → WORSP	0.419	0.044	9.477	0.000*
H9. TRUST → WORSP	0.259	0.056	4.625	0.000*
H10. TRUST → COMIT	0.188	0.043	4.353	0.000*
H11. WORSP → BRAND	0.328	0.044	7.482	0.000*
H12. WORSP → SHARE	0.357	0.045	7.880	0.000*

V. Conclusions

1. Research Implications

The current study contributes to the existing literature on influencer marketing by investigating influencer worship and its effects on marketing performance. The research findings demonstrate that influencer worship is formed through various paths, and followers perceive utilitarian, hedonic, and social values toward online influencers. Furthermore, the study identifies the characteristics of influencer worship and the relationship of worship formation with marketing performance.

First, the study's results suggest that hedonic values are critical in creating commitment to influencers. Specifically, novelty and enjoyment were found to positively influence commitment to an influencer. The findings indicate that presenting unique and novel content can enhance effectiveness in gaining commitment from followers. Additionally, influencers that offer enjoyable content, such as entertaining or humorous posts, are more likely to encourage commitment from followers. These findings are helpful for companies that use the relationship between an influencer and a follower for brand promotion or product advertisement, as it suggests that entertainment elements and information provision are important. While some influencers contend that bestowing hedonic value can be challenging, particularly when addressing topics perceived as less humorous, even within serious content domains, influencers possess the capability to inject an element of amusement with supplementary elements like appropriate images and guest appearances.

Second, the relationship between attractiveness and commitment was not supported, which is

different from previous studies claiming that attractiveness significantly affects endorser commitment. One possible explanation of this rejection is the diminishing effect of physical attractiveness on positive attitudes in the context of online influencers. The potential implication of this finding is that influencer marketers should not rely solely on the physical attractiveness of an influencer to enhance commitment, and should consider other factors that influence commitment. It may also be attributed to recent advancements in real-time broadcasting software technology. Influencers can now employ video filters empowered by artificial intelligence to present themselves in a more attractive manner than their actual appearance, or they can even engage as Vtubers, using fictional virtual characters.

Third, the present study found support for both variables related to utilitarian values that affect influencer trust. Specifically, expertise and reciprocal communication were shown to affect influencer trust positively. These findings suggest that brands can enhance influencer trust by selecting influencers with relevant expertise in the product category, and promoting reciprocal communication between influencers and followers. In addition, by partnering with influencers perceived as trustworthy, brands can increase the credibility of the brand or product they are promoting. Furthermore, working with influencers to create content that showcases expertise, such as product reviews, tutorials, or industry insights, can also help enhance influencer marketing campaign effectiveness.

Fourth, this study investigated the influence of social values on influencer trust, and the results revealed that closeness and morality positively affected influencer trust. The results imply that consumers are more likely to trust influencers perceived as close and moral. Viewing influencers as advertising models has undeniably hinged on emotional metrics like CPV (cost per view) and likability. Nevertheless, as we move forward, advertisers will need a method to assess the ethical values of influencers. This finding suggests that brands should consider the ethical implications of influencer campaigns to improve brand trust and credibility. These results contribute to a deeper understanding of the role of social values in shaping consumer behavior in the influencer marketing context. Therefore, it is recommended that brand marketers select influencers that align with the brand's values and messaging.

Fifth, based on the supported hypotheses, it can be concluded that hedonic, social, and utilitarian values significantly predict consumer attitudes towards influencers, and that influencer worship mediates the relationship between endorsed brand attitude and willingness to share the review. This finding has important implications for firms that use influencer marketing as part of their promotional strategies. Companies can leverage the power of influencer worship to create positive attitudes toward the brand, and increase the likelihood of their products being shared through word-of-mouth. To address potential negative aspects, such as the inconsistency between influencer behavior and the brand's values or image, companies should carefully choose influencers to ensure alignment. The study provides valuable insights for marketers seeking to design more effective influencer marketing campaigns by identifying the factors influencing influencer worship, and the impact of worship behavior on desirable marketing output.

2. Limitations and Future Study

This study has several limitations that present opportunities for further investigation. First, the sample of the study was restricted to Korean consumers. According to some study results, Korean users were found to place a higher value on personal relationships with influencers and the credibility of influencer content (Lee et al.., 2022). On the other hand, foreign users were more likely to be influenced by the number of followers and the level of engagement with influencer content, showing cultural differences (Bentley et al., 2021). The global synchronization of pop culture and social media suggests that the research findings in Korea could potentially be generalized to other

countries, but it is recommended that future studies validate the presented conceptual model in different cultural contexts.

Second, the study was limited by the rapidly changing nature of social media usage. At the time of data collection, Instagram, YouTube, and Facebook were the dominant social media platforms, and most respondents were following influencers active on these platforms. However, the increasing popularity of new short-form content-based platforms, such as TikTok, and B2B-focused social media platforms, such as LinkedIn, may have implications for future research on influencer marketing.

Third, further exploration into the perception of value in influencer marketing could include an examination of additional variables. For instance, the concept of hedonic value posits that individuals seek out pleasure and avoid pain

(Verplaken & Sato, 2011). However, this study did not incorporate variables related to the avoidance of pain. Thus, future research should consider incorporating negative values to provide a more comprehensive understanding of this topic.

Finally, the respondents of this study primarily consisted of the MZ generation, and there may be limitations to generalizing the findings to other generations, such as baby boomers and the alpha generation, who are increasingly using social media and may be influenced by influencers. The MZ generation was found to place a higher value on authenticity and transparency in influencer content (Choi, 2019), whereas users of other generations were more likely to be influenced by the influencer's celebrity status and endorsement of products. Therefore, further research is recommended to expand the study's scope to a broader range of consumer generation groups.

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Analysis of Investment Intention Factors by Multiple Subjects to Crowdfunding Types*

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ABSTRACT

Purpose – The type of crowdfunding varies depending on the rewards provided to investors. Even though there may be differences in investment attraction strategies depending on type, crowdfunding is often viewed singularly, or only analyzed by factor of investment intention for one type. This paper analyzed whether the factors affecting investment intentions leading to project performance differ depending on the type of crowdfunding, compensation standards, and equity standards.

Design/Methodology/Approach – This study conducted an online survey of 343 respondents in Korea from May 6th to 13th, 2023, to investigate how the main factors of the UTAUT model, trust, and authenticity perception affect each investment intention depending on the type of crowdfunding platform. After coding the collected data, factor analysis, goodness of fit, convergence and discrimination validity, and regression analysis were conducted with SPSS 26 and Stata 17.

Findings – According to the results, social influence, performance expectancy, and authenticity perception were factors influencing intention to invest in reward-based crowdfunding. Factors affecting intention to use equity-based crowdfunding were social influence and performance expectancy.

Research Implications – Through this study, it is expected that a more appropriate strategy can be established in consideration of factors that affect different investment willingness depending on the type to increase crowdfunding performance, and it is anticipated that potential investor intention to participate in crowdfunding projects will increase.

Keywords: authenticity, crowdfunding, equity-based crowdfunding, reward-based crowdfunding, trust, UTAUT
JEL Classifications: D83, G11, G32, L15, L86, M15

I. Introduction

Entrepreneurship is creating economic value by launching or operating new businesses despite the high risk. It is significant that it is sometimes regarded as an economic catalyst for the country (Medina et al., 2022). Also, it is known that increasing self-efficacy according to entrepreneurship has a positive effect on the intention of small business owners to start their own businesses and performance (Jung et al., 2022). Although entrepreneurs have creative ideas and believe they can create economic value, investors may not agree. The entrepreneurs have to raise seed capital from angel capitalists or venture capitalists, but they can still find it difficult to produce business results (Bhidé, 2003). However, crowdfunding, mostly conducted on Internet-based platforms where many investors connect with project fundraisers for the purpose of financing a particular campaign, can be a reasonable alternative to funding innovative projects that are difficult to implement (Belleflammer et al., 2015). The market size of crowdfunding is constantly growing. According to a report by Grand View Research (2022), the global crowdfunding market size was worth USD 1.49 billion in 2021, and the annual growth rate is expected to be 16.2% from 2022 to 2030. Crowdfunding is classified as donation-based, reward-based, equity-based, and peer-to-peer lending-based depending on the various fundraising activities and compensation methods offered to investors in exchange for funds. Reward-based and donation-based are collectively referred to as community crowdfunding, and equity-based and peer-to-peer lending based are financial return crowdfunding (Kirby & Wornor, 2014).

Among the studies on crowdfunding, there is not enough research comparing factors of investment intention according to difference by type. This is because research has tended to view crowdfunding as one rather than dividing it by type (Kim et al., 2020; Kim & Jeon, 2017), and even when the types were divided, only the factors of investment intention for one type were

analyzed. (Kang et al., 2016; Moon & Hwang, 2018). However, investors by type are expected to have different expectations and motivations (Kim & Jeon, 2017), which infers that there is a necessity for differences in startup strategies to attract investment depending on the type of platform. According to a study by Ko and Kim (2022), individual funder investment decision-making factors, such as biased overconfidence tendency and mental accounting, affect investment performance. This is different from the traditional financial management theory that professional investment institutions and individual investors have the same factors in making investment decisions, indicating the need to examine the factors affecting crowdfunding investment intentions in more detail (Choi & Shin, 2023).

In previous studies on the differences in startup strategy by type, Liu and Choe (2020) identified factors that affect investment and participation intentions in reward-based and investment-based crowdfunding. The study argued that reward-based crowdfunding founders should pay attention to the development and provision of innovative and creative funding projects, while adopting a method of increasing the return of the funding project itself to lead investor participation in equity-based crowdfunding. In addition, Cholakova and Clarysse (2015) insisted that providing attractive rewards is important for a successful crowdfunding campaign because motivation for equity-based and reward-based investment decisions is mainly based on financial motivation; non-financial motivation plays a secondary role. However, the limitation is that non-financial motivation could not affect investment decisions for reward-based projects because the financial motivation may have been large because the survey target was users of equity-based platforms.

This study analyzes whether there is a difference in influence by setting factors affecting investment intention as the unified theory of acceptance and use of technology (UTAUT) model, trust perspective, and authenticity factors according to differences in reward-based and equity-based crowdfunding, which account for

the largest portion of crowdfunding types. The structure of this study is as follows. Section 2 presents a literature review of crowdfunding. Section 3 presents a research model and proposes hypotheses. Section 4 analyzes the research model using survey response data, and Section 5 discusses the limitations of the study as well as the interpretation of the findings.

II. Literature Review and Hypothesis

1. Theoretical Framework

1.1. Crowdfunding

Crowdfunding is a sort of crowdsourcing that gathers ideas or feedback from an unspecified public, and shares profits with participants in the product development process; it can be regarded as an open collection to receive financial resources from the general public. (Kleeman & Reider, 2008). Crowdfunding is mostly done on Internet-based crowdfunding platforms where many sponsors connect with fundraisers for the purpose of funding specific campaigns or projects, attracting different types of participants by offering compensation for various fundraising activities and funding.

Crowdfunding is classified as reward-based, donation-based, equity-based, and lending-based projects, which have different forms. Investors have different preferences for these campaigns, so crowdfunding projects are divided by the various financing activities and compensation methods provided to investors in return for funds. (Kirby & Wornor, 2014). Crowdfunding platforms also provide one-to-many matching, rather than one-to-one matching, because a project needs one or more funders to achieve the funding goal (Belleflamme et al., 2015).

Community crowdfunding, which includes reward-based and donation-based, does not provide financial returns to investors that invest in the project. Funders for reward-based crowdfunding,

primarily in IT-based electronics, culture, environment, education, and so on do not offer equity or monetary rewards for projects, but rather provide investors with non-monetary rewards such as products, performance appreciation, and education (Yoo et al., 2014). Donation-based crowdfunding, on the other hand, does not provide personal benefits. Financial return crowdfunding is crowdfunding that rewards investors financially. Funders of equity-based crowdfunding provide equity to investors, and remuneration depends on the performance of the project when it succeeds at the financing stage. Funders for lending-based crowdfunding offer interest payments in exchange for loans (Moysidou & Hausberg, 2020).

1.2. Unified Theory of Acceptance and Use of Technology Model

The utilization of new technologies requires members to accept and use them, and several theoretical models based on information systems, psychology, and sociology have been derived, with the unified theory of UTAUT integrating eight of these (Venkatesh et al., 2003). Models that serve as evidence for the adoption of new technologies have been proposed, but as the scope of application of each theory was limited, it was necessary to select a specific configuration among the models, or ignore the contributions of alternative models. As such, UTAUT was built to present a unified perspective by integrating models such as the theory of reasoned action (TRA), the technology acceptance model (TAM), and the theory of planned behavior (TPB). UTAUT has been used to study various technologies with high predictability, and individual behavioral intentions are influenced by major concepts such as performance expectancy, effort expectancy, social influence, and facilitation conditions (Venkatesh et al., 2012). The UTAUT theory is suitable for factors for which users adopt new technologies, such as research on factors influencing the behavior of consumers using mobile delivery apps (Zhao et al., 2022).

Effort expectation refers to the perceived range of convenience that emerges from the use of

new information or new technology (Venkatesh et al., 2003). In this study, effort expectancy is defined as the ease with which investors expect to be able to invest through crowdfunding. Social influence refers to the degree to which important people around users advocate for the individual application of new information technology (Venkatesh et al., 2003; Venkatesh et al., 2012). This study defined social influence as the degree of influence of a user's surrounding group on a user's willingness to invest in crowdfunding. Performance expectancy refers to the degree of improvement in performance that is expected to be observed as a result of the use of specific new information or technology (Venkatesh et al., 2003). It is defined as the degree of benefits expected to be obtained through crowdfunding in this paper. Intention to use is a major predictor of investment behavior in crowdfunding (Gerber & Hui, 2013). Existing literature has demonstrated that the UTAUT model is a useful tool for understanding technology acceptance behavior in an organizational context (Venkatesh et al., 2003, Venkatesh et al., 2012), and can predict crowdfunding investment behavior (Li et al., 2018; Moon & Wang, 2018).

In this study, the UTAUT model (effort expectancy, social influence, and performance expectancy) is applied and analyzed with factors that affect the investment intention of reward-based and equity-based crowdfunding.

1.3. Trust

Trust plays an important role in crowdfunding, accompanied by uncertainty and reliance on social and economic communication (Alhalbey & Van Hemmen, 2021). Funders want to reduce transaction costs such as the uncertainty and complexity of online transactions through trust because of the limited information and cognitive resources available (Yu et al., 2015). Previous studies have shown that the intention to invest in crowdfunding is more influenced by trust in the platform than trust in fundraisers (Kim et al., 2020). Therefore, due to the importance of trust in crowdfunding, this study considers trust in the platform a central factor in the context of willingness to use crowdfunding. In addition, since the role of perceived accreditation and third-party seal is related to consumer confidence in crowdfunding platforms (Hall & Williams, 2019; Kang et al., 2016), this study considers these to be important factors in crowdfunding investment intentions. Accreditation is described by the scope of efforts undertaken to validate the project's capital as needed, and the funders' ability to perform as expected (Pavlu, 2002). When accreditation is performed by independent institutions such as crowdfunding platform management, the platform's accreditation mechanism verifies the actual funding requirements. Therefore, in this study, perceived accreditation is conceptualized as the possibility of verifying the requirements of the fundraiser of the crowdfunding platform system. A Third-party seal refers to the guarantee of crowdfunding platforms provided by third-party certification bodies such as banks, accountants, consumer associations, and computer companies (Kim et al., 2008). A third-party seal can reduce the asymmetry of recognized information and serve as a visual signal of system stability for smooth crowdfunding. The third party seal significantly reduces investor concerns and boosts crowdfunding platform confidence through the promulgation and enforcement of explicit rules. In this study, the third party seal is defined as the stability of the crowdfunding platform system.

1.4. Authenticity Perception

Authenticity refers to the perception that the audience perceives that the expressors are sincerely expressing actions or feelings, and are not deceiving themselves by superficially acting on the emotions they are experiencing (Groth, 2009). In addition, authenticity infers one's own uniqueness or identity compared to others. According to general sociological observations, authenticity is a socially constructed phenomenon regardless of whether it is genuine, or whether it can be determined objectively. According to this point of

view, certain aspects of a product, performance, place, or producer are defined and treated as true by the audience in a particular social context, and are usually divided into two dimensions: moral authenticity and type authenticity (Carroll & Wheaton, 2009). The first dimension of authenticity is moral authenticity, which conveys the moral meaning of the value and choice inherent in the object. An organization would be sincere to the extent that it embodies the chosen value of its founder, owner, or member rather than simple customs such as trends (Radoynovska & King, 2019). The focus of moral authenticity is first whether the individuals or groups involved in the establishment and maintenance of the object have sincerely worked to realize their true morality, and second, whether the object actually embraces these (Carroll & Wheaton, 2009). The second dimension of authenticity means that an object is assigned or clearly fits into a particular classification that someone claimed to have assigned. The point lies in whether the object is included in a type, genre, or category agreed upon among the audience, or meets the criteria for membership.

Since early venture companies or recruiters of crowdfunding cannot rely on financial performance or reputation to inform users, it is necessary to actively project the sincerity of the fundraiser to appeal to the generosity of the sponsor and affect emotional judgment. (Bucher et al., 2018). In addition, unlike traditional industries that have a standard analysis from various angles with balance sheets, the fact that the current Internet industry has a high proportion of valuation of intangible assets, making it difficult to estimate the value, adds to the argument that the authenticity of crowdfunding startups, which are difficult to estimate, can be an investment factor (Xiong, 2022). Moral authenticity refers to the degree to which an individual is considered true in his or her beliefs and principles, rather than being obsessed with social expectations. Moral authenticity is a sign that individual behavior is consistent with beliefs. Type authenticity captures how many characteristics or representative entities/experiences exist in the perceived category (Grazian, 2005). This makes it easier for investors to understand the project if the content of the crowdfunding project is representative of the existing product or business category, and implies tradition.

2. Hypothesis Development

This paper examines the differences in factors affecting investment intention depending on the type of crowdfunding platform. It analyzes how the UTAUT model (effort expectancy, social influence, and performance expectancy), trust (perceived accreditation, third-party seal), and authenticity perception (moral authenticity and type authenticity) are applied to analyze use intention in existing literature (See Fig. 1).

2.1. Relationships Between Investment Intention and Concepts of UTAUT

From the perspective of community crowd-funding, several studies set up a UTAUT model and applied it as a research framework to analyze intention to participate (Kim & Hall, 2020; Li et al., 2018; Moon & Hwang, 2018). Moon and Hwang (2018) identified factors that affected sponsors participating in sustainable and appropriate technology projects through the UTAUT model through a reward-based crowdfunding platform, and derived the results that social influence on user intention was the greatest, and effort expectancy influenced as well. Li et al. (2018) discovered that charity crowdfunding projects conducted by non-profit organizations in China had a significant impact on donor willingness to donate in the order of social influence, effort expectancy, and performance expectancy. In particular, Chinese donation activities have a significant social influence because they show a significant impact on donation satisfaction due to selfish motives such as maintaining an image or honor within the organization (Jiang & Zhao, 2022). In addition, Kim and Hall (2020) established a theoretically integrated research framework through UTAUT that influenced the structure of project

Fig. 1. Research Model and Hypotheses
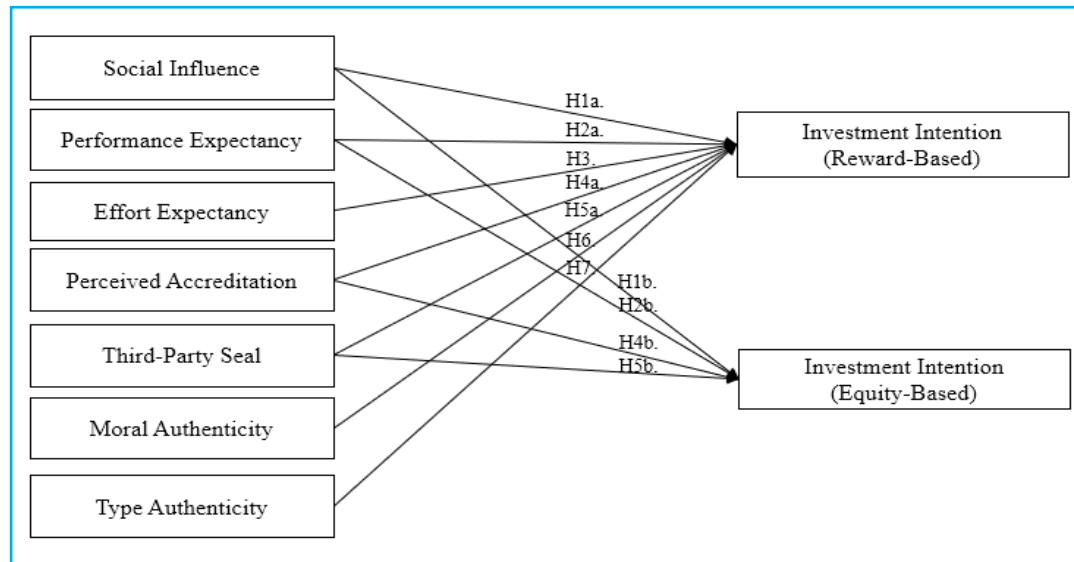
description on consumer behavior in reward-based crowdfunding. Previous studies noted that the ease of use of reward-based crowdfunding has a positive effect on the participation intention of sponsors (Li et al., 2018). In addition, the social influence caused by peer effects in which funders and acquaintances mutually influence each other ultimately affects the investment behavior of reward-based crowdfunding users (Park & Lee, 2016). Kim and Jeon (2017) asserted investor and sponsor expectations for reward-based project performance will also affect willingness to participate in a project.

In a study that revealed that the main investment decision criteria of venture capitalists and angel investors differ in existing investment methods and equity-based crowdfunding, it was revealed that the investment decision criteria of investors in equity-based crowdfunding is important for a network, or social influence, along with initial funding and product understanding. (Lukkarinen et al., 2016) In addition, an existing study analyzed factors affecting cryptocurrency investment using the UTATU model (Gupta et al., 2021).

Cryptocurrency investment and crowdfunding are a type of fintech that refers to technology that broadly affects how financial payments, financing, loans, investments, financial services, and currencies are performed, and investors in both activities have an overconfidence disposition and a confirmation bias. According to Gupta et al., (2021), social influence and performance expectancy affect willingness to invest in cryptocurrency. According to Gupta et al. (2021), social influence and performance expectancy affect cryptocurrency investment intentions, but effort expectancy has the least impact. Previous study has shown that the speculative nature of cryptocurrencies has increased the role of peer pressure, which is a social influence. Performance expectancy arising from the use of specific technologies are considered a factor that positively affects individual investment behavior intentions (Arias-Oliva et al., 2019; Venkatesh et al., 2012). Therefore, hypotheses on the investment intention of reward-based and equity-based crowdfunding applying the UTAUT model are proposed as follows.

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H1a: The social influence of users has a positive effect on the investment intention of reward-based crowdfunding.

H1b: The social influence of users has a positive effect on the investment intention of equity-based crowdfunding.

H2a: The performance expectancy of users has a positive effect on the investment intention of reward-based crowdfunding.

H2b: The performance expectancy of users has a positive effect on the investment intention of equity-based crowdfunding.

H3: The effort expectancy of users has a positive effect on the investment intention of reward-based crowdfunding.

2.2. Relationships Between Investment Intention and Concepts of Trust

In the previous study, it was found that the trust perception that investors recognize by providing services and security that strengthen the crowdfunding platform's trust factors affects the intention to use in both reward-based and equity-based crowdfunding (Kang et al., 2016; Moon & Hwang, 2017; Rizwan & Mustafa, 2022). Yu and Xiao (2023) found that a platform's project authentication mechanism has a positive effect on the funding performance of reward-based crowdfunding projects. It was also observed that third-party endorsement alleviates information asymmetry concerns about reward-based project quality and founder reliability, and had a positive effect on crowdfunding success (Courtney et al., 2017). In equity-based crowdfunding platforms, perceived accreditation and third-party seal have also been shown to affect investor willingness to participate (Rizwan & Mustafa, 2022). Roh et al. (2022) found that user adoption of fintech, a relatively new technology and technology-based financial innovation that affects financial markets, including equity-based crowdfunding, follows consumer trust and consumer security perceptions that induce psychological stability. From a trust-based perspective, hypotheses on the investment intention of reward-based and equity-based

crowdfunding are proposed as follows.

H4a: The perceived accreditation of the platform has a positive effect on the investment intention of reward-based crowdfunding.

H4b: The perceived accreditation of the platform has a positive effect on the investment intention of equity-based crowdfunding.

H5a: The third-party seal of the platform has a positive effect on the investment intention of reward-based crowdfunding.

H5b: The third-party seal of the platform has a positive effect on the investment intention of equity-based crowdfunding.

2.3. Relationships Between Investment Intention and Concepts of Authenticity Perception

Authenticity is divided into moral authenticity and type authenticity. Previous studies have shown that audience recognition of authenticity in reward-based crowdfunding triggers awareness of warmth/liability, leading to various forms of support (Radoynovska & King, 2019). Reward-based tends to rely on voluntary donations from crowds, and sponsors are more likely to be driven by the overall perceptions of projects and founders than business models or financial performance, so projecting authenticity increases funding performance. Investors that participate in art and cultural projects mainly allocated to reward crowdfunding platforms consider it an extension of donation or sponsorship activities, and invest (Lee & Shin, 2014). In this case, the authenticity that signals an emotional display can be effective in drawing investment from potential investors (Oo & Allison, 2022). On the other hand, according to a study that analyzed the effect of entrepreneurial narrative tone on crowdfunding success, investors in community-type platforms prefer emotional language, but in the case of financial profit-type platforms, funding success improved with cognitive tone narrative (Wuillaume et al., 2019).

Table 1. Variables and Survey Questions

Variable		Survey Question	Reference
Social Influence (SI)	SI1	If my friends encourage me to invest in crowdfunding projects, I think I will follow them.	(Moon & Hwang, 2018; Venkatesh et al., 2003)
	SI2	People around me will likely give me advice and help in investing and sponsoring crowdfunding projects.	
Performance Expectancy (PE)	PE1	Investing in crowdfunding projects will be useful.	(Moon & Hwang, 2018; Venkatesh et al., 2003)
	PE2	Investing in crowdfunding projects will increase my productivity and benefits.	
	PE3	Investing in crowdfunding projects makes it easier to earn benefits.	
	PE4	Investing in crowdfunding projects will increase opportunities to earn benefits.	
Effort Expectancy (EE)	EE1	It would be easy to invest in projects using crowdfunding.	(Moon & Hwang, 2018; Venkatesh et al., 2003)
	EE2	It would be easy to learn to invest on projects using crowdfunding	
	EE3	Investment in projects through crowdfunding is expected to be simple and easy to understand.	
Perceived Accreditation (PA)	A1	Crowdfunding platforms conduct a thorough screening process to determine eligibility for funding.	(Kim et al., 2008)
	PA2	Crowdfunding platforms make significant efforts to assess the actual capabilities of fundraising projects.	
Third-Party Seal (TPS)	TPS1	Third-party seals make me feel more comfortable with crowdfunding platforms.	(Kang et al., 2016; Kim et al., 2008)
	TPS2	Third-party seals make me feel that the crowdfunding platform is secure.	
	TPS3	Third-party seals make me feel safer in terms of funding.	
Moral Authenticity (MA)		The crowdfunding projects generally seem to be presented sincerely.	(Napoli et al., 2014; Radoynovska & King, 2019)
Type Authenticity (TA)		The crowdfunding projects generally seem to reinforce and/or are based on traditions.	(Napoli et al., 2014; Radoynovska & King, 2019)
Reward-Based Crowdfunding Use Intention (UIR)	UIR1	I intend to invest in reward-based crowdfunding projects.	(Moon & Hwang, 2018; Venkatesh et al., 2003)
	UIR2	I would encourage people around me to invest in reward-based crowdfunding projects.	
	UIR3	I intend to invest in reward-based crowdfunding projects regularly.	
Equity-Based Crowdfunding Use Intention (UIE)	UIE1	I intend to invest in equity-based crowdfunding projects.	(Moon & Hwang, 2018; Venkatesh et al., 2003)
	UIE2	I would encourage people around me to invest in equity-based crowdfunding projects.	
	UIE3	I intend to invest in equity-based crowdfunding projects regularly.	

This indicates that cognitive consideration is the motivation for investment in the case of equity-based crowdfunding investors, and the sincerity of appealing to the voluntary participation of the crowd does not affect willingness to invest. The hypotheses are proposed as follows.

H6: The moral authenticity perception of the project has a positive effect on the investment intention of reward-based crowdfunding.

H7: The type authenticity perception of the project has a positive effect on the investment intention of reward-based crowdfunding.

III. Methodology

This study conducted an online survey of the general public to investigate how the main factors of the UTAUT model, trust, and authenticity perception affect each investment intention depending on the type of crowdfunding platform. In addition, the definition was described at the head of the survey to help respondents understand reward-based and equity-based crowdfunding. Demographic statistics include questions about participant gender, age, education, occupation, and reward-based and equity-based crowdfunding experience. The independent variables of this study are social influence, performance expectancy, effort expectancy, perceived accreditation, third-party seal, moral authenticity, and type authenticity. The dependent variables are investment intention on reward-based and equity-based crowdfunding that affect the success of crowdfunding fundraising. The composite score was used by averaging the items in the survey that belonged to each configuration. Demographic variables were coded and introduced in the control variable. These variables were then regressed. The questionnaire measuring each variable was organized by referring to the variable definition and hypothesis development described in Section 2 (See Table 1). The questionnaire items were

measured using a 5-point Likert scale (strongly disagree [1]; disagree [2]; neutral [3], agree [4], strongly agree [5]).

1. Data Description

This study conducted an online survey of 343 people of the general public in Korea from May 6th to 13th, 2023. The demographic characteristics of the respondents are summarized in Table 1. There were 203 male respondents and 140 female respondents, with seven aged 10 to 19, 129 aged 20 to 29, 76 aged 30 to 39, 63 aged 40 to 49, 52 aged 50 to 59, and 16 aged 60 to 69. Therefore, individuals between the ages of 20 and 40 account for more than 75% of all respondents. A majority of the respondents had a university or college degree (65.9%). The respondent occupations were 92 administrative and office workers, 78 students, 53 professionals, 32 others, 31 unemployed, 23 full-time housewives, 18 production workers, and 16 self-employed. 188 respondents did not experience crowdfunding, 89 respondents experienced only reward-based crowdfunding, 47 respondents experienced equity-based crowdfunding, and 19 respondents experienced both. Therefore, 45.2% of respondents reported experience with crowdfunding projects.

IV. Results and Discussion

1. Results of Factor Analysis

This study conducted factor analysis to statistically confirm that the questionnaire items describe each composition included in the research model. The descriptive statistics of the survey measurements are shown in Table 3. A confirmatory factor analysis was performed to assess whether variables defined and set through previous studies are adequately clear through questionnaire items. The binomial distributions MA and TA with a single item were excluded. Factor analysis of each measurement variable was conducted using SPSS 26 and Stata 17, and the

Table 2. Demographic and Social Statistics of Respondents

Variable	Features	Freq.	%	Variable	Features	Freq.	%
Gender	Male	203	59.2	Occupation	Management/ Office Work	92	26.8
	Female	140	40.8		Others	32	9.3
Age	10's	7	2.0		Unemployed	31	9.0
	20's	129	37.6		Production Work	18	5.2
	30's	76	22.2		Self-Employed	16	4.7
	40's	63	18.4		Professionals	53	15.5
	50's	52	15.2		Full-Time Housewife	23	6.7
	60's	16	4.7		Students	78	22.7
Education	Middle or High School Graduate	117	34.1	Experience with Crowdfunding	Not Experienced	188	54.8
	University or College Degree	197	57.4		Experienced Reward-Based Crowdfunding	89	25.9
					Experienced Equity-Based Crowdfunding	47	13.7
	Graduate School	29	8.5		Experienced Both	19	5.5
	Total	343	100.0		Total	343	100.0

variables of the model were constructed based on the survey response. As summarized in Table 4, seven variables were extracted. All standardized factor loadings are significant and exceed 0.6. The absolute values of distortion and kurtosis range from 0.010 to 0.536 and from 0.309 to 1.003, respectively, and both belong to traditional multivariate normality standards (Hair et al., 2010).

Table 3. Descriptive Statistics of the Variables

Variable	Measurement Variables	N	Min	Max	Average	Standard Deviation
Social Influence (SI)	SI1	343	1	5	2.76	1.158
	SI2	343	1	5	2.79	1.197
Performance Expectancy (PE)	PE1	343	1	5	3.11	1.052
	PE2	343	1	5	3.08	1.113
	PE3	343	1	5	3.03	1.117
	PE4	343	1	5	3.17	1.126
Effort Expectancy (EE)	EE1	343	1	5	2.91	1.050
	EE2	343	1	5	3.08	1.124
	EE3	343	1	5	2.97	1.152
Perceived Accreditation (PA)	PA1	343	1	5	2.77	1.050
	PA2	343	1	5	2.93	1.103
Third-Party Seal (TPS)	TPS1	343	1	5	3.24	1.059
	TPS2	343	1	5	3.37	1.111
	TPS3	343	1	5	3.38	1.117
Moral Authenticity (MA)		343	1	5	3.03	1.000
Type Authenticity (TA)		343	1	5	3.21	0.972
Reward-Based Crowdfunding Use Intention (UIR)	UIR1	343	1	5	3.08	1.165
	UIR2	343	1	5	2.85	1.168
	UIR3	343	1	5	2.79	1.179
Equity-Based Crowdfunding Use Intention (UIE)	UIE1	343	1	5	3.00	1.203
	UIE2	343	1	5	2.76	1.180
	UIE3	343	1	5	2.68	1.183

Table 4. Total Variance Explained by Factor Analysis

Factor	Initial Eigenvalue			Extraction Sum of Squared Loading			Rotation Sum of Squared Loading
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.859	44.296	44.296	8.859	44.296	44.296	2.765
2	2.036	10.178	54.474	2.036	10.178	54.474	2.650
3	1.536	7.680	62.154	1.536	7.680	62.154	2.563
4	1.226	6.129	68.283	1.226	6.129	68.283	2.430
5	1.053	5.265	73.548	1.053	5.265	73.548	2.273
6	0.798	3.990	77.539	0.798	3.990	77.539	1.890
7	0.684	3.422	80.961	0.684	3.422	80.961	1.622
8	0.466	2.329	83.290				
9	0.436	2.178	85.468				
10	0.378	1.891	87.358				

The goodness of fit satisfies the recommended standards, indicating that the model is valid to analyze the relationships between measurement factors, (See Table 5). The results indicate that all values exceed the recommended criteria and are suitable for the collected data.

Table 5. Goodness of Fit

Goodness of Fit	RMSEA	TLI	CFI
Standard	< 0.08	> 0.9	> 0.9
Result	0.067	0.935	0.949

Convergence validity was supported for all configurations, with each concept's composite reliability (CR) exceeding 0.7, Cronbach's alpha exceeding 0.7, and the extracted mean variance (AVE) exceeding 0.5 (Fornell & Larker, 1981)(See Table 6). Furthermore, the square root of AVE for all concepts is larger than the correlation between each concept and corresponding concept, so discriminant validity has been confirmed (Fornell & Larker, 1981).

Table 6. Tests of Convergent and Discrimination Validity

Construct	UIR	UIE	EE	SI	PA	TPS	PE	MA	TA
UIR	0.80								
UIE	0.48*	0.85							
EE	0.40*	0.27*	0.80						
SI	0.48*	0.47*	0.27*	0.85					
PA	0.44*	0.54*	0.31*	0.46*	0.86				
TPS	0.41*	0.37*	0.44*	0.29*	0.53*	0.83			
PE	0.55*	0.66*	0.48*	0.46*	0.66*	0.59*	0.84		
MA	0.52*	0.46*	0.42*	0.42*	0.56*	0.51*	0.60*	N/A	
TA	0.48*	0.43*	0.38*	0.30*	0.49*	0.51*	0.55*	0.57*	N/A
AVE	0.64	0.72	0.65	0.73	0.73	0.70	0.70	N/A	N/A
C.R.	0.84	0.89	0.85	0.84	0.85	0.87	0.90	N/A	N/A
Cronbach's Alpha	0.84	0.89	0.84	0.84	0.84	0.87	0.90	N/A	N/A
Mean	2.91	2.81	2.98	2.17	2.85	3.33	3.10	3.03	3.21
SD	-1.02	-1.07	-0.97	-1.02	-1.00	-0.97	-0.97	-1.00	-0.97
VIF	1.94	2.05	1.49	1.59	2.13	1.89	3.09	2.06	1.81

Notes: 1. The bolded diagonals in the "correlation of constructs" depict the square root of AVE of constructs.

2. t statistics in parentheses, *p<0.05.

2. Results of Regression Analysis

Regression analysis was performed to investigate how factors of UTAUT, trust, and authenticity affect investment intentions for reward-based and equity-based crowdfunding. Table 7 shows the results of regression analysis of independent variables with a p value less than 0.05. The result shows that in reward-based crowdfunding, social influence (SI) (b = 0.241, p < .001), performance expectancy (PE) (b = 0.226, p < .01), moral authenticity (MA) (b = 0.157, p < .01), and type authenticity (TA) (b < 0.137, p < .05) affected investment intention. In equity-based, social influence (SI) (b = 0.202, p < .001) and performance expectancy (PE) (b = 0.545, p

< .001) had a significant impact on investment intentions, and perceived accreditation (PA) (b = 0.116, p < .10) had a partial impact. Therefore, social influence and performance expectancy affected both reward-based and equity-based crowdfunding investment intentions, but factors that only affect investment intentions in reward-based crowdfunding were moral authenticity and type authenticity. This implies that the more respondents recognize the authenticity of the project, the higher the willingness to invest in reward-based crowdfunding. Conversely, it was discovered that authenticity perception was not related to equity-based crowdfunding investment intention.

Table 7. Regression Analysis Results

	UIR	UIE
Independent Variable		
SI	0.241***	0.202***
	(5.005)	(4.146)
PE	0.226**	0.545***
	(3.253)	(7.744)
MA	0.157**	0.026
	(2.701)	(0.439)
TA	0.137*	0.078
	(2.459)	(1.382)
N	343	343
R^2	0.515	0.546
adj. R^2	0.476	0.510
F	13.451	15.232
ll	-369.611	-374.694
p	0.000	0.000

Note: t statistics in parentheses $+p<0.10$, $*p<0.05$, $**p<0.01$, $***p<0.001$.

There are factors that funders of crowdfunding projects should consider in common, regardless of type, in order to increase investor willingness. First is the social influence that encourages investors should be considered. For example, through the rapid development of technology, social media has dramatically changed the way people communicate and receive information in recent years (Gantulga et al., 2021). It is necessary to create advertisements for a project through various media, as this will be effective in inducing project recognition and recommendation through the participation of investor acquaintances on social network services, where individual communications are active (Moon & Hwang, 2018). In addition, through interactions with investors due to the existence of social network services, investors reluctant to understand projects can also be enticed (Shneor & Vik, 2020). Performance expectancy is also important because investing in projects will lead to improved profits. Even though crowdfunding is difficult to grow through financial performance because most are ventures or short-term projects, willingness to invest will increase if the usefulness and profitability of the project can be accepted by investors. On the other hand, there is also a factor of investment intention considered only in one type according to the difference in crowdfunding type. In the case of reward-based crowdfunding, in addition to social influence and performance expectancy, the authenticity of the project affects intention to invest. Therefore, the more a fundraiser is recognized by investors for sincerity to carry out projects that can satisfy with pride and honesty, the higher the intention to invest.

V. Conclusion

Based on online survey analysis, it was discovered that social influence and performance expectancy affect both reward-based and equity-based crowdfunding investment intentions. In addition, it was found that respondent authenticity perceptions affect reward-based crowdfunding,

though it does not affect equity-based crowdfunding. This can have a stronger impact of authenticity on reward-based crowdfunding investment, because crowdfunding sponsors for projects mainly related to rewards such as art and culture projects regard participation as a form of donation/sponsorship rather than simply purchasing/consuming goods or content (Kim & Lee, 2014). On the other hand, in the case of equity-based crowdfunding investors, cognitive consideration rather than emotional motivation is the main reason for investment, so the authenticity of appealing to the voluntary participation of the crowd does not affect intention to invest (Wuillaume et al., 2019). Therefore, in order to achieve reward-based crowdfunding, it is necessary to attract investors that value authenticity.

Data was collected in this study through an online survey. Therefore, among the respondents, those in their 20s and 30s familiar with online surveys and crowdfunding through online platforms were most numerous in the survey, limiting even data collection for all age groups. In addition, definitions describing the concept of crowdfunding and the differences between reward-based and equity-based were provided, but it is unknown whether the respondents understood well. Therefore, research is needed, including a questionnaire method that helps understand the concept. There is also a limitation for the questionnaire. When selecting one of the fundraiser descriptions that contained authenticity, it was premised on the type of crowdfunding, so the relationship between the respondent authenticity preference variable and other variables could not be compared. If crowdfunding did not have the premise of type, more models could be established. Since non-response bias, a CMB test, multi-group analysis, and bootstrapping were not conducted, there is a limit to the justification, generalization, and integration review of the sample.

This study reviewed the concept and type of crowdfunding, which is another method to secure funds for venture companies or individual

businesses and projects, and the theoretical background of UTAUT, trust perspective, and authenticity, which are factors of investment intention that lead to the success of crowdfunding. It also studied whether the factors of willingness to invest in reward-based and equity-based crowdfunding, which occupy the largest market in Korea, were different. Previous studies analyzed crowdfunding investment intention factors without being limited to or divided into one type, but this study serves as an academic contribution by analyzing the difference by setting investment intention factors between the two crowdfunding types as factors of the UTAUT model, trust, and authenticity. In practice, the results of this study, which applied three theories for constructs, are expected to reflect reality and establish a more appropriate strategy by considering increasing potential investor willingness to invest in projects depending on type of crowdfunding. This study focused on reward-based and equity-based crowdfunding, but it is also necessary to analyze the factors of investment intention for other types, including donation-based and lending-based crowdfunding.

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The Effect of the VR (Virtual Reality) Usability of Safety Training for Airline Flight Attendants on Perceived Learning, Safety Behaviors, and Satisfaction

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ABSTRACT

Purpose – The purpose of this study is to examine the VR (Virtual Reality) usability of the newly implemented safety VR training in the airline sector and to investigate the relationships and effects among perceived learning, safety behaviors, and satisfaction.

Design/Methodology/Approach – In this study, hypotheses concerning the relationship between VR usability and perceived learning, safety behaviors, and satisfaction were examined through multiple regression analysis, utilizing data from a survey of 423 employees within a domestic airline implementing VR training in South Korea.

Findings – Airlines are a dynamic field wherein there is a continuous trend of ongoing technological advancements and the development and application of digital features. In response to these changes, airlines have been introducing VR-based safety training methods. This study confirmed that flight attendants that underwent VR training assessed their perception of VR usability, contributing to performance in safety tasks and expressing satisfaction with the outcomes. VR training not only offers a realistic and immersive experience that depicts actual scenarios but also encourages active participation among employees.

Research Implications – This study provides results that overcome the challenges of realistically reproducing emergency situations in training environments by introducing training based on VR. This study anticipates that the findings will offer valuable insights for fields attempting to utilize VR for training purposes.

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I. Introduction

The aviation industry is an intrinsically vital component that is indispensable in both the global and modern economies. The intra and inter-regional connectivity of air transport has been shown to lead to enhanced innovation and improvements, fostering investment and augmenting business competitiveness. As the only rapid global transportation network, it facilitates connections among governments, businesses, and people, enabling major economic activities such as investment, world trade, travel, and tourism (IATA, 2020a). Despite COVID-19, commercial aviation is projected to grow by approximately 4.3% annually over the next 20 years. By 2040, it is estimated to contribute around 15.5 million in direct jobs, and $1.5 trillion to global GDP (Ahlgren, 2021). Consequently, airlines link people, cultures, economies, and businesses, propelling economic growth and social development through positive contributions to humanity. The importance of these connections is amplified in times of disaster. Based on this, there is a need for the aviation sector to become more reliable, enhancing safety and security measures to augment its sustainability (Walsh, 2023). Airline safety has become a driving force in shaping company image and securing competitiveness in today's competitive business environment. Consequently, every airline prioritizes safety above all else. Particularly, in the aviation industry, in-flight safety is a non-negotiable and undervalued essential concern (Chen et al., 2017). According to the 'Aviation Business Act', South Korea's Ministry of Land, Infrastructure, and Transport has conducted an annual aviation traffic service evaluation since 2018 to induce voluntary service improvement by operators and protect the rights of air traffic users; safety is included in the evaluation criteria (Molit, 2023). To align with this scenario, there should be a focus on maintaining a talented employee pool capable of achieving safety performance in aviation tasks and retaining competent flight attendants (Chen et al., 2019). In this context, well-trained cabin crews are essential components in aircraft

emergencies (Gangabissoon et al. 2020), making it imperative to possess the right skill set for proper training.

The aviation industry is characterized as an ever-evolving dynamic sector, undergoing various transformations as technology advances and new digital features are developed (Jiang et al., 2023). According to IATA, prior to the COVID-19 pandemic, the majority of training was conducted face to face. However, the amalgamation of the pandemic, innovative ideas, and emerging technologies has facilitated the refinement of training delivery methods. For instance, new technologies encompass the integration of Virtual Reality (VR), which is already being effectively utilized in ground operations training. Innovative ideas include the incorporation of gamification elements, a proven reliable strategy in engaging learners in a entertaining manner and sustaining interest both during and post-training sessions (IATA, 2022b). In addition to this, the International Civil Aviation Organization (ICAO) has developed the Guidelines on Digital Learning (Circular 356) specifically for cabin crew training, offering directives on the design, utilization, and development of digital learning for cabin crew safety training (ICAO, 2020). This provision paves the way for enhanced opportunities to augment the competencies of cabin crew members, including technical skills and knowledge. VR, a technology that leverages computer generated content to augment user experiences, enables participants to engage fully in a simulated environment, fostering an immersive experience. Such technology is engineered to generate an entirely artificial world, wherein users can explore and interact in a realistic way (Jiang et al., 2023). Recently, advanced aviation countries have shown interest in the effectiveness of VR safety training, and have rapidly adopted it to conduct safety training (Kim & Lee, 2022). All Nippon Airways (ANA) was the first to conduct cabin safety training using VR via an advanced training system in 2018. By simulating emergency scenarios, the system prepares flight attendants to respond quickly and effectively in the event of a crisis (ANA, 2020). Lufthansa launched

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a VR hub to enhance cabin crew training at centers in Frankfurt and München in 2019. Since then, over 20,000 Lufthansa crew members have completed regular training via VR, intensifying efforts in safety and emergency situations, as well as human factors education (Lufthansa, 2019). In Korea, Jeju Air is the only airline that has adopted VR for safety training to enhance response capability in emergency situations. VR moves beyond traditional training methods based on photos and images, offering an experiential learning environment centered around the trainee. This approach enhances the training effect by fostering increased engagement and immersion, marking a distinct departure from conventional methods (Kim, 2019). These trends suggest that VR is a powerful tool for vocational training, especially for safety-critical occupations where physical training is often too complex, expensive, or dangerous (Pedram et al., 2020).

Considering the above, the purpose of this study is to examine newly introduced airline VR safety training for flight attendants. First, in VR training, users interact with a virtual reality environment using sensors and controllers that track movements while wearing a headset. This study examines the impact of VR usability on learning, as perceived by the trainees, at this stage. This examination will enable the prediction of the educational value of VR training. Second, this study seeks to assess whether VR enhances the capacity to identify and apply the core concepts of safety training realistically, and if this improved understanding is reflected in flight attendant safety behaviors. Given that the effective execution of safety activities are a high priority for airlines, our findings could be a valuable resource for those considering the integration of VR into training programs. Finally, this study aims to determine the relationship between flight attendant perceived learning through VR and satisfaction, and the relationship between flight attendant safety behaviors and training satisfaction. Through this analysis, the purpose of this study is to ultimately demonstrate whether VR's experiential training incites interest, emotional immersion, and physical immersion among learners.

II. Literature Review

Virtual reality (VR) is a technology based on the interaction between a three-dimensional (3D) virtual space where telepresence is experienced and a user (Kim, 2023; Steuer, 1992). VR, through a head-mounted display (HMD) that renders virtual environments in three dimensions, can realistically represent and create scenarios that are specifically dangerous in reality, provide assistance in situations that are difficult or costly to produce (Dalgarno & Lee, 2010), and allow one to become familiar with actual environments (Renganayagalu et al., 2021). When designing training systems utilizing Information Technology (IT), there are factors that influence behavioral adoption and the actual learning experience. For instance, it is crucial to construct a system with good usability (Akinbobola & Adeleke, 2013). In order to realize the benefits of VR training, the user experience of the training process and system must operate together; otherwise, the desired training outcomes cannot be achieved (Ardito, et. al., 2006). VR usability directly predicts learner attitudes toward the technology, and indirectly impacts the learning experience within VR (Davis et al., 1989). In Davis' study (1989), usability was identified as a variable influencing the decision to accept or reject information technology when people use a system, proposing two factors (perceived usefulness and perceived ease of use). Here, perceived ease of use stems from the definition of 'ease', and refers to the belief that using a specific system will not require significant effort. This means that, all other conditions being equal, an application perceived as easy to use is more likely to be readily accepted by users than other alternatives (Davis, 1989; Pedram, et al., 2020). Therefore, perceived ease of use is the most influential construct directly affecting behavioral intention (Chow, et. al., 2012), and is associated with how users evaluate the effort related to the progression of technology utilization (Venkatesh, 2000). Perceived usefulness originates from the definition of 'useful', and refers to a user's belief that utilizing a particular system will enhance

job performance (Davis, 1989). In other words, it is the degree to which a user perceives VR is a useful tool to improve performance. A user-friendly interface enhances perceived usefulness and promotes a positive attitude toward a specific technology (Song, et. al., 2021). Additionally, perceived ease of use and perceived usefulness are factors that reflect how easy it is to perform the required tasks in the virtual environment while perceiving VR a useful tool to improve performance from the user perspective (Lee et al., 2010; Makransky & Petersen, 2019). Moreover, in the VR safety training area, Pedram et al. (2020) introduced the perceived plausibility factor as a component of usability. In 2009, Slater introduced the concepts of Place Illusion (PI) and Plausibility Illusion (PSI) to present semantics that contribute to realistic responses in virtual environments. PI is defined as the illusion of being in a place, despite clear awareness that one is not actually there. In contrast, PSI refers to the illusion that something is really happening, even though one knows for sure that it is not (Slater, 2009). In other words, PI and PSI are similar types of illusions. PI represents the concept of "being there", indicating a sense of presence, while PSI is defined as "the illusion that what is apparently happening is really happening (even though you know for sure that it is not)" (Slater, 2009, 3531, 3553). In the context of VR training, the ultimate goal is to reproduce events closely aligned with reality, allowing users to have 'first-hand' experience. Consequently, perceived plausibility is a crucial aspect of presence that captures the extent to which users believe in what they are seeing (Skarbez et al., 2018). Therefore, VR can be more beneficial when trainees record a high perceived plausibility, and the perceived events appear as if they are actually occurring. Several studies have emphasized the positive impact of perceived ease of use and perceived usefulness as a sub-factor of VR usability on the adoption of new technology (Al-Busaidi, 2013; Ifinedo et al., 2018; Yeou, 2016). In the context of training research, perceived ease of use and perceived usefulness are widely used factors in technology-enhanced environments (Abdullah &

Ward, 2016). Mackey and Ho (2008) analyzed the relationship between web usability and perceived learning in the design and implementation of Web-based multimedia (WBMM) tutorials. In the study, learners responded favorably to usability factors, and also found that lectures and readings were enhanced by virtual resources. Consequently, they confirmed a significant correlation between the usability factors of WBMM tutorials and the way learners perceived their own learning. Pedram et al. (2020), in a study on the impact of VR training on the safety training of mine rescuers after VR training in immersive virtual reality, demonstrated that VR training environments are associated with learning, and that VR usability improved user attitudes toward technology and perceived learning. Therefore, the following hypothesis was derived.

H1: VR usability of VR training involving flight attendants will affect perceived learning.

Learning theories develop ideas for learning through either internal (mind) or external (behavior) approaches. Additionally, perceived learning and actual learning represent distinct concepts, and are classified as different methods of analyzing learning processes. (Batista & Cornachione, 2005). According to observations by Bacon (2016), perceived learning refers to a learner's report on their own knowledge acquisition, typically based on self-examination and some reflection. In contrast, actual learning reflects the change in knowledge confirmed by strict measurements of learning. Perceived learning is a self-regulatory behavior that results from one's reflection on the impact of instruction (Nikolic et al., 2020; Rovai et al., 2009). In addition, perceived learning is a set of the learner's beliefs and feelings about how they feel about the learning that occurred from prior learning. It can be considered a retrospective evaluation of the learning experience (Caspi & Blau, 2008). Perceived learning has been considered a metric of learning, and is one of the core elements in

evaluating the training process; it encapsulates the views and opinions of learners about the training already received (Wright et al., 2006). The concept of perceived learning draws its meaning from two sources: cognitive and socio-emotional. The cognitive source reflects other cognitive-based processes, such as the ability to make sense of some of the new knowledge after acquiring it, even if the knowledge and understanding are inaccurate. The socio-emotional source reflects experiences and feelings (i.e., enjoyment or difficulty), interactions (with instructors or other colleagues), or feelings of innovation in current learning. In other words, a socio-emotional source can be said to reflect more extensively the 'peripheral' aspects of the learning process (Caspi & Blau, 2008). Alavi et al. (2002) defined perceived learning as the extent to which learner perceptions of knowledge levels and skills changed before and after a learning experience. The study demonstrated that when learners have high perceived learning (i.e., believe they have utilized the training materials very well) in an online or virtual environment, rather than in a traditional learning setting, they are much more engaged than they would be face-to-face (Fredericksen et al., 2000). For organizations applying VR training, the content, structure, and design of the training is one of the factors that can significantly predict the perceived learning and satisfaction of trainees. Moreover, the satisfaction of trainees regarding learning is especially crucial, as it has often been revealed to impact the outcomes (Swan, 2001). Research targeting learners enrolled in Massive Open Online Courses (MOOCs) has demonstrated a positive relationship between perceived learning and satisfaction within the online learning environment. (Li, 2019). This study aims to focus on the learning outcomes that trainees wish to achieve with the implementation of a new training approach in airlines, specifically through VR training. Using perceived learning as a measure, the following hypothesis has been formulated.

H2: Perceived learning resulting from airline VR training significantly affects satisfaction.

Safety behavior is defined as the actions taken to adhere to safety regulations during the performance of tasks related to safety to prevent the occurrence of safety incidents (Neal & Griffin, 2006). One of the most important predictive variables affecting safety behavior is the safety climate, which represents the perception of procedures, policies, and practices related to safety in the workplace. It reflects employee perceptions of how safety is evaluated within the organization (Curcuruto & Griffin, 2016; Griffin & Neal, 2000; Li & Griffin, 2022). Safety is a major concern for organizations, as it is a source of significant costs, both direct and indirect (Amponsah & Adu, 2016; Sutherland & Cooper, 2018). In relation to this, managing employee safety behaviors effectively is set as an important goal in organizations, as it can reduce the financial and human costs arising from accidents and injuries (Hofmann et al., 2003). Safety behaviors are generally explained in two ways in relation to work performance: safety compliance and safety participation (Neal et al., 2000). Safety compliance, as an in-role safety behavior, includes core activities that employees must perform in the workplace to ensure the safety of employees and individuals, such as adhering to standard operating procedures and wearing personal protective equipment. It encompasses procedures and basic activities. Safety participation refers to extra-role safety behaviors. While not directly contributing to safety activities, these voluntary behaviors, such as active training participation, suggestions, and meeting attendance, help promote a safe environment (Neal et al., 2000; Neal & Griffin, 2006). Meanwhile, a study on safety behaviors associated with airlines has classified these behaviors into three categories: in-role safety behavior, extra-role safety behavior, and upward safety communication (Chen & Chen, 2014). In this context, in-role safety behavior refers to the strict adherence to manuals that are essential for preventing safety accidents within airlines. Extra-role safety behavior encompasses actions that, while not mandatory, involve voluntary efforts by employees to enhance the safety of both individuals and the organization. Notably,

the term upward safety communication refers to the practice of cabin crews and other subordinate employees proactively expressing concerns or suggestions related to safety issues directly to management (Kath et al., 2010). In research on perceived safety and safety behavior, it was found that manager commitment to safety and the fulfillment of promises to employees increases employee work engagement; therefore, an increase in perceived management commitment to safety is associated with higher employee safety behavior (Hansez & Chmiel, 2010). Based on this, the current study hypothesizes that the extent to which flight attendants demonstrate safety behaviors will be affected by how they perceive their learning following the experience of VR training. The following primary hypothesis has been established.

**H3:** Perceived learning resulting from airline VR training significantly affects safety behavior.

Job satisfaction refers to an employee's sense of fulfilment, contentedness, and positive emotional reactions toward their work (Ali et al., 2014; Choi & Park, 2022); Li & Griffin, 2022). According to Schmidt (2007), there are three major implied definitions included in training satisfaction. First, training satisfaction focuses on the entire job training, not a single training process. Second, the subject of evaluation is the planned training activities officially provided by the organization, not the informal learning efforts initiated by colleagues or employees. Third, it refers to the general trainee reactions to training elements, such as a priori reactions and post reactions. Job satisfaction is positively associated with perceived organizational support, while it is negatively associated with workplace stress and job risks (Li & Griffin, 2022). Employees that experience satisfaction within their organization tend to deliver more efficient results in achieving the organization's objectives (Aninkan, 2014). Therefore, job satisfaction is a crucial element for the growth of every organization, and represents a pleasant emotional state wherein individuals

express positive emotions. In the modern business environment, employee satisfaction is a key aspect of effectively maintaining an organization. This is especially true in an era where competition between organizations is intensifying due to technological advancements, prompting organizations to strive to develop a more productive workforce to meet demand (Abdulla et al., 2011). A recent study investigated the impact of VR simulation on the confidence, skills, and satisfaction of nursing students. It found a significant increase in confidence in the experimental group that utilized VR. Furthermore, after practicing with the VR program, an enhancement in skills profoundly influenced confidence and satisfaction. Consequently, as the study proved the impact of VR training on performance and satisfaction, it recommended VR training as a new training method to further improve challenging and complex skills (Park & Yoon, 2023). In a previous study by Kim & Lee (2023) that applied VR training for airline safety, the psychosocial safety climate was found to positively impact safety behavior. As a result of VR, not only was compliance with safety rules in actual practice effectively maintained, the satisfaction with various aspects, including learner, instructor, and environment content, was also highly rated. In a study understanding the effects of VR-based construction safety training, trainee satisfaction with the training was identified as a crucial factor in enhancing the transfer of knowledge and skills acquired through safety training (Yoo et al., 2023). Therefore, the following hypothesis was derived.

H4: Safety behavior perceived through airline VR training will significantly affect satisfaction.

The research model of this study is set as shown in Fig. 1. The study aimed to investigate the impact of VR usability on perceived learning, safety behavior, and satisfaction in the context of VR training applied to the safety training of airline flight attendants.

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Fig. 1. Research Model
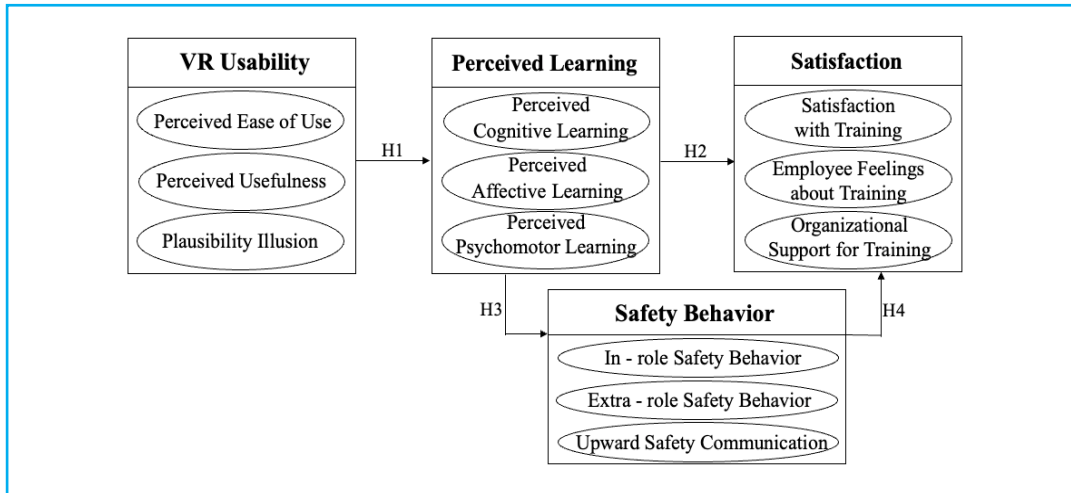
III. Research Methodology

1. Research Subjects and Data Collection

This study aims to analyze how VR usability affects perceived learning, safety behavior, and satisfaction in the context of safety VR training involving airline flight attendants to highlight the significance of VR training, and suggest appropriate training directions via the results. For the purpose of this study and hypothesis assessment, an online survey was conducted from November 2022 to January 2023, involving 440 flight attendants from J Air that had participated in the airline's safety VR training. After data collection, 17 responses that were either incomplete or lacked reliability were excluded, resulting in a total of 423 samples used for analysis. To mitigate the issue of method bias in this study, the strategy of rearranging the order of survey items was adopted, as suggested by Fuller et al. (2016).

2. Measurement of Variables

To derive VR usability in relation to airline VR safety training, this study adopts the definition proposed by Davis (1989), which defines it as the

degree to which information technology influences decisions to accept or reject it when they use the system. The VR usability utilized in this study was classified into three dimensions: perceived ease of use (Calisir & Calisir, 2004; Davis et al., 1989; Hansen et al., 2018; Taufik & Hanafiah, 2019), perceived usefulness (Alsabawy et al., 2016; Davis et al., 1989; Lee et al., 2010; Song et al., 2021), and plausibility illusion (Baños et al., 2000; Cho et al., 2014). The VR usability in this study was measured using a set of 16 items. These items collectively represented various aspects of VR usability in VR safety training. Perceived learning was measured using the perceived learning outcomes scale (Lim & Richardson, 2020). In this study, Perceived learning is defined as the set of learner beliefs and feelings about the learning that has occurred, and is assessed through three sub-factors: perceived cognitive learning (Lim & Richardson, 2021; Thomas et al., 2019), perceived affective learning (Andersen, 1979; Rovai et al., 2009), and perceived psychomotor learning (Rovai et al., 2009). It was measured using nine items. Safety behavior, which is a major concern for airlines, was defined by Neal and Griffin (2006) as the behavior of following safety regulations to prevent safety accidents from occurring in the

process of performing safety related duties, and was evaluated through three sub-factors: in-role safety behavior (Chen & Chen, 2014; Doerr, 2020; Neal & Griffin, 2006), extra-role safety behavior (Chen & Chen, 2014; Doerr, 2020; Neal & Griffin, 2006), and upward safety communication (Chen, 2017; Chen & Chen, 2014; Hofmann & Morgeson, 1999). An eight item scale was used to assess safety behavior. Satisfaction was defined in this study as the degree to which a user is satisfied with using a technology for a specific purpose. A total of 11 items were gauged to assess satisfaction, and were categorized into three dimensions: satisfaction with training (Gangabissoon et al., 2020; Lee et al., 2010; Lim & Richardson, 2021; Schmidt, 2007), employee feelings about training (Gangabissoon et al., 2020; Kuo et al., 2014; Lim & Richardson, 2021; Schmidt, 2007), and organizational support for training (Kuo et al., 2014; Lee et al., 2010; Schmidt, 2007). This study items were anchored on 5-point Likert scales.

3. Analysis Approach

Analysis was conducted using the SPSS 25 statistical package. Frequency analysis was used to identify the characteristics of the flight attendants in this study, and factor analysis and reliability analysis were used to verify the validity and reliability of the measured variables of VR usability, perceived learning, safety behavior, and satisfaction. Correlation analysis was conducted to examine the associations among the conceptual constructs of this study, and multiple regression analysis was performed to test the research hypotheses.

IV. Results and Discussion

1. Respondent Profile

The demographic characteristics of the participants in this study were examined through a frequency analysis, the findings of which are compiled in Table 1. Among the 423 individuals

surveyed, males represent 37.1%, while females account for 62.9%, showing a predominant female presence. The majority of participants, accounting for 63.1%, were in their late twenties to mid-thirties. When examining the length of working period at their current airline, 10.2% worked for up to 3 years, 25.1% for 4-6 years, 49.4% for 7-10 years, 13.5% for 11-15 years, and 1.9% have been employed for over 16 years, with those having 7-10 years of experience being the largest group. From the perspective of employment status, 13.0% were irregular employees, while a substantial 87.0% were regular employees. In terms of total VR training experience, 35.5% have participated 3-4 times, and 35.9% have participated 5-6 times, with these two groups combined accounting for 71.4% of the total.

2. Test of Validity and reliability

An exploratory factor analysis was carried out to authenticate the variables measuring core concepts, including airline 'VR usability', 'perceived learning', 'safety behavior', and 'satisfaction', integral to this research. The analysis results for each factor are presented in Tables 2-5. Through principal component analysis with varimax orthogonal rotation, three factors each were extracted for 'VR usability', 'perceived learning', 'safety behavior', and 'satisfaction'. Each factor has an eigenvalue of more than 1.0, and all items comprised have a factor loading value of 0.5 or higher. A reliability analysis was conducted to determine the internal consistency of each factor. The Cronbach's α coefficient for each factor exceeds 0.7 (Castilloa & Clavanob, 2021; Lance et al., 2006; Liu et al., 2022), indicating that each demonstrates internal consistency. The factor analysis results for airline VR usability are detailed in Table 2. Three distinct factors were identified, namely 'perceived usefulness', 'perceived ease of use', and 'plausibility illusion'. The degree of correlation between VR usability and related variables is represented through the Kaiser-Meyer-Olkin (KMO) analysis results. With a KMO value of 0.796 and a Bartlett's test of sphericity χ² of

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Table 1. Demographic Characteristics of Respondents (N=423)

	Variable	Frequency	Percent (%)
Gender	Male	157	37.1
	Female	266	62.9
Age	20~25	26	6.1
	26~30	75	17.7
	31~35	192	45.4
	36~40	95	22.5
	41~45	31	7.3
	46 or above	4	.9
Number of Years in the Airline Industry	Less than 3	43	10.2
	Between 4~6	106	25.1
	Between 7~10	209	49.4
	Between 11~15	57	13.5
	16 or above	8	1.9
Employment Status	Irregular employee	55	13.0
	Regular employee	368	87.0
Total VR Training Experience	Between 1~2	45	10.6
	Between 3~4	150	35.5
	Between 5~6	152	35.9
	Between 7~8	38	9.0
	Between 9~10	28	6.6
	11 or above	10	2.4

5523.822 (df=120, p=.000), the validity is well established. VR usability explains approximately 71% of the total cumulative variance. Following the factor analysis for perceived learning, three factors were distinguished: 'perceived cognitive learning', 'perceived affective learning', and 'perceived psychomotor learning'. The outcomes of this analysis are outlined in Table 3. The KMO measure was used to represent the degree of correlation between the perceived learning variables, and Bartlett's test of sphericity was conducted. The

results showed a KMO value of 0.726 and a Bartlett's test of sphericity χ^2 of 2524.811 (df=36, p=.000). The validity was confirmed to be robust with the total cumulative variance nearing 80%, illustrating a comprehensive representation of the core concepts. Table 4 outlines three identified safety behavior factors: 'in-role', 'extra-role', and 'upward safety communication', each with eigenvalues exceeding 1. The results revealed a KMO value of 0.768 and a Bartlett's test of sphericity χ^2 of 1670.400 (df=28, p=.000). A total

cumulative variance of roughly 75% signifies that the factors are reliably validated, affirming the representational accuracy for the underlying constructs. Factor analysis results related to satisfaction are summarized in Table 5. Three factors with eigenvalues over 1 were identified: 'satisfaction with training', 'employee feelings about training', and 'organizational support for training'. KMO analysis for satisfaction yielded a KMO value of 0.776, and Bartlett's test of sphericity χ² was 4247.328 (df=55, p=.000). The total explained variance is approximately 79%, signifying that the validity of these variables is confirmed. Table 6 summarizes the correlation analysis. The correlation coefficients among the measured variables 'VR usability', 'perceived learning', 'safety behavior', and 'satisfaction' indicate a significant relationship at the .01 level (Cheng, 2022).

Table 2. Results of Reliability and Factor Analysis of VR Usability (df=120)

Factor	Variable	Factor Loading	Eigen-value	Variance (%)	Cronbach's Alpha
Perceived Usefulness	Using VR in my job would enable me to accomplish tasks more quickly.	.836	5.279	32.995	.925
	Using VR would improve my job performance.	.811			
	Using VR in my job would increase my productivity.	.794			
	Using VR would enhance my effectiveness on the job.	.790			
	Using VR would make it easier to do my job.	.772			
	VR training allows me to progress at my own pace.	.747			
	This VR training simulator was helpful to learn about (headgear, controller, VR mockup).	.696			
Perceived Ease of Use	It would be easy for me to become skillful at using VR.	.875	3.782	23.638	.898
	Overall, I think this VR is easy to use.	.772			
	The VR instructions are clear and understandable.	.769			
	Learning to operate VR is easy for me.	.750			
	My interaction with VR would be clear and understandable.	.674			
	I feel confident working on VR training.	.659			
Plausibility Illusion	The screen image quality of VR training was realistic.	.860	2.329	14.557	.729
	What I saw in the virtual world was somewhat similar to reality.	.731			
	VR shows possible real-life situations.	.723			
	KMO=.796, Bartlett's chi-square approximation=5523.822, Sig.=.000, Total cumulative variance(%)=71.190					

Table 3. Results of Reliability and Factor Analysis of Perceived Learning (df=36)

Factor	Variable	Factor Loading	Eigen-value	Variance (%)	Cronbach's Alpha
Perceived Cognitive Learning	I gained a good understanding of the basic concepts of the subject area (decompression, fire).	.879	2.855	31.719	.887
	I learned to identify the central issues of safety training through VR training.	.868			
	I improved my ability to integrate facts and develop generalizations about some content realistically in VR training.	.800			
	I understand the link between theory and practice for crisis communications.	.721			
Perceived Affective Learning	I changed my attitude toward safety accidents as a result of VR training.	.861	2.383	26.481	.804
	I feel more self-reliant as the result of the content learned in this course.	.839			
	I feel that I am a more sophisticated thinker as a result of the VR training course.	.765			
Perceived Psychomotor Learning	I am able to use physical skills learned in VR training outside of class.	.947	1.979	21.986	.872
	I can demonstrate to others the physical skills learned in VR training.	.886			

KMO=.726, Bartlett's chi-square approximation=2524.811, Sig.=.000,
Total cumulative variance(%)=80.186

Table 4. Results of Reliability and Factor Analysis of Safety Behavior (df=28)

Factor	Variable	Factor Loading	Eigen-value	Variance (%)	Cronbach's Alpha
In-role	I use the correct safety procedures to carry out my job.	.871	2.102	26.272	.772
	During ground check, I will make sure all emergency equipment has been loaded properly.	.820			
Extra-role	I put in extra effort to improve safety on board.	.808	1.995	24.941	.863
	I voluntarily carry out tasks or activities that help to improve cabin safety.	.775			
Upward Safety Communication	I feel comfortable discussing safety behavior with my supervisor.	.859	1.897	23.709	.830
	I feel that my supervisor openly accepts ideas to improve safety.	.675			
	I feel that my supervisor encourages open communication about safety.	.630			
	I would like to propose suggestions regarding safety issues.	.617			

KMO=.768, Bartlett's chi-square approximation=1670.400, Sig.=.000,
Total cumulative variance(%)=74.922

Table 5. Results of Reliability and Factor Analysis of Satisfaction (df=55)

Factor	Variable	Factor Loading	Eigen-value	Variance (%)	Cronbach's Alpha
Satisfaction with Training	I was satisfied with this type of VR-based learning experience.	.865	3.132	28.477	.886
	I was satisfied with the teaching methods in this type of VR-based learning environment.	.826			
	I was satisfied with the overall learning VR effectiveness.	.761			
	I think that the application of VR training would potentially help cabin crew perform their work.	.741			
Employee Feelings about Training	Overall, I am very satisfied with VR training.	.843	3.096	28.143	.867
	I would recommend this VR training to my fellow cabin crew members.	.815			
	I am satisfied with the level of interaction that happened in VR training.	.620			
	In the future, I would be willing to take a fully VR training again.	.611			
Organizational Support for Training	A wide variety of learning materials was provided in this type of VR-based learning environment.	.896	2.486	22.598	.839
	I was satisfied with this type of VR-based learning environment.	.794			
	This VR training contributed to my professional development.	.626			
	KMO=.776, Bartlett's chi-square approximation=4247.328, Sig.=.000, Total cumulative variance(%)=79.218				

Table 6. Correlation Matrix

Construct	PEU	PU	PI	PCL	PAL	PPL	ISB	ESB	USC	ST	EFT	OST
PEU	1											
PU	.593**	1										
PI	.263**	.434**	1									
PCL	.496**	.768**	.356**	1								
PAL	.491**	.590**	.458**	.474**	1							
PPL	.481**	.343**	.486**	.306**	.349**	1						
ISB	.406**	.497**	.199**	.500**	.423**	.265**	1					
ESB	.502**	.611**	.339**	.598**	.582**	.251**	.630**	1				
USC	.835**	.664**	.361**	.595**	.433**	.585**	.509**	.552**	1			
ST	.637**	.732**	.634**	.668**	.690**	.419**	.536**	.565**	.739**	1		
EFT	.691**	.767**	.321**	.741**	.409**	.479**	.555**	.427**	.733**	.663**	1	
OST	.574**	.625**	.314**	.500**	.436**	.445**	.347**	.389**	.513**	.566**	.746**	1

Notes: 1. **p<0.01.
2. PEU(Perceived Ease of Use), PU(Perceived Usefulness), PI(Plausibility Illusion), PCL(Perceived Cognitive　Learning), PAL(Perceived Affective Learning), PPL(Perceived Psychomotor Learning), ISB(In-role Safety Behavior), ESB(Extra-role Safety Behavior), USC(Upward Safety Communication), ST(Satisfaction with Training), EFT(Employee Feelings about Training), OST(Organizational Support for Training).

3. The Influence of VR Usability on Perceived Learning

To verify the significant impact of airline VR usability on perceived learning, a multiple regression analysis was performed using the enter method, and the results are summarized in Table 7. The hypothesis that the "VR usability of VR training involving flight attendants will affect perceived learning" was examined and consisted of three sub-hypotheses. The results of testing the first hypothesis, "VR usability will significantly affect perceived cognitive learning in airline training", are as follows. At the 0.001 significance level, 'perceived usefulness' has a positive effect on 'perceived cognitive learning' (β=.680, t=19.417, p=.000), and 'perceived ease of use' also positively influences 'perceived cognitive learning' (β=.152, t=4.332, p=.000). Moreover, at the 0.1 significance level, 'plausibility illusion' has a negative yet not highly significant effect on 'perceived cognitive learning' (β=-.017, t=-.490, p=.062). The results of the second hypothesis, "VR usability will

significantly affect perceived affective learning in the airline training", are articulated below. At the 0.001 significance level, 'perceived usefulness' exerts a positive effect on 'perceived affective learning' (β=.325, t=7.539, p=.000). Similarly, 'perceived ease of use' positively affects 'perceived affective learning' (β=.237, t=5.497, p=.000), and 'plausibility illusion' also has a positive effect on 'perceived affective learning' (β=.241, t=5.579, p=.000). The evaluation of the third hypothesis, "VR usability will significantly affect perceived psychomotor learning in the airline training", yielded the following results. At a significance level of 0.001, 'perceived ease of use' has a positive effect on 'perceived psychomotor learning' (β=.314, t=7.423, p=.000), and 'plausibility illusion' also positively influences 'perceived psychomotor learning' (β=.390, t=9.232, p=.000). However, 'perceived usefulness' does not statistically significantly affect 'perceived psychomotor learning', leading to the rejection of this part of the hypothesis.

Table 7. Effect of VR Usability on Perceived Learning

Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Perceived Cognitive Learning	PU	.680	.035	.680	19.417	.000***	1.000	1.000
	PEU	.152	.035	.152	4.332	.000***	1.000	1.000
	PI	-.017	.035	-.017	-.490	.062*	1.000	1.000
R^2=.486, Adj. R^2= .482, Durbin-Watson=1.127, F=132.007, p= .000***								
Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Perceived Affective Learning	PU	.325	.043	.325	7.539	.000***	1.000	1.000
	PEU	.237	.043	.237	5.497	.000***	1.000	1.000
	PI	.241	.043	.241	5.579	.000***	1.000	1.000
R^2=.220, Adj. R^2= .214, Durbin-Watson=2.096, F=39.393, p= .000***								
Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Perceived Psychomotor Learning	PU	.037	0.42	.037	.887	.376	1.000	1.000
	PEU	.314	0.42	.314	7.423	.000***	1.000	1.000
	PI	.390	0.42	.390	9.232	.000***	1.000	1.000
R^2=.252, Adj. R^2= .247, Durbin-Watson=2.181, F=47.040, p= .000***								

Note: *p<0.1, **p<0.05, ***p<0.001.

4. The Influence of Perceived Learning on Satisfaction

The impact of perceived learning through airline VR training on satisfaction was evaluated using a multiple regression analysis with the enter method, and the results are captured in Table 8. The hypothesis that "perceived learning resulting from airline VR training significantly affects satisfaction" was broken down and evaluated through three sub-hypotheses. The results of testing the first sub-hypothesis, "perceived learning will significantly affect satisfaction with training in airline company", are as follows. At the 0.001 significance level, 'perceived cognitive learning' positively affects 'satisfaction with training' (β=.313, t=8.987, p=.000). Similarly, 'perceived affective learning' positively affects 'satisfaction with training' (β=.609, t=17.472, p=.000), and 'perceived psychomotor learning' also exerts a positive effect on 'satisfaction with training' (β=.150, t=4.300, p=.000). The results of the second sub-hypothesis, "perceived learning will significantly affect employee feelings about

training in the airline company", are articulated below. At the 0.001 significance level, 'perceived cognitive learning' positively affects 'employee feelings about training' (β=.615, t=16.666, p=.000), and 'perceived psychomotor learning' also positively affects 'employee feelings about training' (β=.224, t=6.066, p=.000). However, 'perceived affective learning' does not affect 'employee feelings about training' in a statistically significant manner, leading to the rejection of this part of the hypothesis. The evaluation of the third sub-hypothesis, "perceived learning will significantly affect organizational support for training in the airline company", yielded the following results. At a 0.001 significance level, 'perceived psychomotor learning' has a positive effect on 'organizational support for training' (β=.247, t=5.269, p=.000). At the 0.05 significance level, 'perceived affective learning' positively affects 'organizational support for training' (β=.099, t=2.106, p=.036). Additionally, at the 0.1 significance level, 'perceived cognitive learning' also positively affects 'organizational support for training' (β=.090, t=1.921, p=.055).

Table 8. Effect of Perceived learning on Satisfaction

Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Satisfaction with Training	PCL	.313	.035	.313	8.987	.000**	1.000	1.000
	PAL	.609	.035	.609	17.472	.000***	1.000	1.000
	PPL	.150	.035	.150	4.300	.000***	1.000	1.000
R²=.491, Adj. R²= .488, Durbin-Watson=2.239, F=134.844, p= .000***								
Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Employee Feelings about Training	PCL	.615	.037	.615	16.666	.000***	1.000	1.000
	PAL	-.020	.037	-.020	-.553	.580	1.000	1.000
	PPL	.224	.037	.224	6.066	.000***	1.000	1.000
R²=.429, Adj. R²= .425, Durbin-Watson=1.959, F=104.949, p= .000***								
Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Organizational Support for Training	PCL	.090	0.47	.090	1.921	.055*	1.000	1.000
	PAL	.099	0.47	.099	2.106	.036**	1.000	1.000
	PPL	.247	0.47	.247	5.269	000***	1.000	1.000
R²=.079, Adj. R²= .072, Durbin-Watson=2.520, F=11.962, p= .000***								

Note: *p<0.1, **p<0.05, ***p<0.001.

5. The Influence of Perceived Learning on Safety Behavior

This study employed a multiple regression analysis using the enter method to assess the impact of perceived learning through airline VR training on safety behavior. The results are consolidated in Table 9. The central hypothesis that "perceived learning resulting from airline VR training significantly affects safety behavior" was examined through the lens of three sub-hypotheses. The first sub-hypothesis, "perceived learning will significantly affect in-role safety behavior in the airline company", yielded the following results. At the 0.001 significance level, 'perceived cognitive learning' positively affects 'in-role safety behavior' (β=.182, t=3.891, p=.000), and 'perceived affective learning' also positively affects 'in-role safety behavior' (β=.234, t=5.020, p=.000). However, 'perceived psychomotor learning' does not statistically significantly affect 'in-role safety behavior', leading to the rejection of this portion of the hypothesis. The second sub-hypothesis, "perceived learning will significantly affect extra-role safety behavior in the airline company", produced the following outcomes. At the 0.001 significance level, 'perceived cognitive learning' positively affects 'extra-role safety behavior' (β=.483, t=13.126, p=.000), and 'perceived affective learning' also positively affects 'extra-role safety behavior' (β=.445, t=12.081, p=.000). However, 'perceived psychomotor learning' does not statistically affect 'extra-role safety behavior', leading to the rejection of this part of the hypothesis. The results for the third sub-hypothesis, "perceived learning will significantly affect upward safety communication in the airline company", are as follows. At the 0.001 significance level, 'perceived cognitive learning' positively affects 'upward safety communication' (β=.305, t=7.945, p=.000), and 'perceived psychomotor learning' also exerts a positive effect on 'upward safety communication' (β=.539, t=14.046, p=.000). However, 'perceived affective learning' was not found to statistically affect 'upward safety communication', leading to the nullification of this part of the hypothesis.

Table 9. Effect of Perceived Learning on Safety Behavior

Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
In-role Safety Behavior	PCL	.182	.047	.182	3.891	.000***	1.000	1.000
	PAL	.234	.047	.234	5.020	.000***	1.000	1.000
	PPL	.019	.047	.019	.412	.680	1.000	1.000
R²=.088, Adj. R²= .082, Durbin-Watson=1.888, F=13.503, p= .000***								
Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Extra-role Safety Behavior	PCL	.483	.037	.483	13.126	.000***	1.000	1.000
	PAL	.445	.037	.445	12.081	.000***	1.000	1.000
	PPL	-.005	.037	-.005	-.139	.889	1.000	1.000
R²=.432, Adj. R²= .428, Durbin-Watson=2.173, F=106.088, p= .000***								
Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Upward Safety Behavior	PCL	.305	.038	.305	7.945	.000***	1.000	1.000
	PAL	.012	.038	.012	.318	.750	1.000	1.000
	PPL	.539	.038	.539	14.046	.000***	1.000	1.000
R²=.383, Adj. R²= .379, Durbin-Watson=2.054, F=86.836, p= .000***								

Note: *p<0.1, **p<0.05, ***p<0.001.

6. The Influence of Safety Behavior on Satisfaction

To assess whether the safety behavior perceived through airline VR training significantly impacts satisfaction, a multiple regression analysis was carried out using the enter method. The findings of this analysis are summarized in Table 10. The hypothesis "safety behavior perceived through airline VR training will significantly affect satisfaction" was examined and broken down into three sub-hypotheses for a detailed analysis. The first sub-hypothesis, "airline safety behavior will significantly affect satisfaction with training", yielded the following outcomes. At the 0.001 significance level, 'in-role safety behavior' has a positive effect on 'satisfaction with training' (β=.326, t=8.642, p=.000), 'extra-role safety behavior' positively affects 'satisfaction with training' (β=.364, t=9.648, p=.000), and 'upward safety communication' also positively affect 'satisfaction with training' (β=.404, t=10.705, p=.000). Outcomes of the second sub-hypothesis,

presumably addressing the influence of safety behavior on employee feelings about training, are detailed as follows. At the 0.001 significance level, 'in-role safety behavior' positively affects 'employee feelings about training' (β=.270, t=6.486, p=.000), and 'upward safety communication' also positively affects 'employee feelings about training' (β=.440, t=10.572, p=.000). Additionally, at the 0.05 significance level, 'extra-role safety behavior' positively affects 'employee feelings about training' (β=.086, t=2.071, p=.039). The results for the third sub-hypothesis, "airline safety behavior significantly affects organizational support for training", are as follows. At the 0.001 significance level, 'in-role safety behavior' negatively affects 'organizational support for training' (β=-.177, t=-4.007, p=.000), while 'extra-role safety behavior' positively affects 'organizational support for training' (β=.354, t=8.013, p=.000), and 'upward safety communication' positively affects 'organizational support for training' (β=.158, t=3.564, p=.000).

Table 10. Effect of Safety Behavior on Satisfaction

Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Satisfaction with Training	ISB	.326	.038	.326	8.642	.000***	1.000	1.000
	ESB	.364	.038	.364	9.648	.000***	1.000	1.000
	USC	.404	.038	.404	10.705	.000***	1.000	1.000
R^2=.403, Adj. R^2= .398, Durbin-Watson=2.130, F=94.119, p= .000***								
Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Employee Feelings about Training	ISB	.270	.042	.270	6.486	.000***	1.000	1.000
	ESB	.086	.042	.086	2.071	.039**	1.000	1.000
	USC	.440	.042	.440	10.572	.000***	1.000	1.000
R^2=.274, Adj. R^2= .269, Durbin-Watson=1.927, F=52.709, p= .000***								
Dependent Variable	Independent Variable	B	Standard Error	β	t	P	Tolerance	VIF
Organizational Support for Training	ISB	-.177	.044	-.177	-4.007	.000***	1.000	1.000
	ESB	.354	.044	.354	8.013	.000***	1.000	1.000
	USC	.158	.044	.158	3.564	.000***	1.000	1.000
R^2=.182, Adj. R^2= .176, Durbin-Watson=2.339, F=30.987, p= .000***								

Note: *p<0.1, **p<0.05, ***p<0.001.

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V. Conclusion

The aviation industry is a dynamic sector that is experiencing changes in training methods due to continuous technological advancements and the development and diffusion of new digital capabilities. In response to these changes, this study aimed to verify the effectiveness of virtual safety training for cabin crew at domestic airlines that have quickly adopted VR-based training methods. Based on prior studies that identified the most relevant variables in explaining training processes in VR, the study sets research hypotheses, analyzes them, and presents the findings and implications as follows.

First, it was shown that VR usability significantly affects perceived learning overall. This result is similar to the findings of Mackey and Ho (2008), who showed positive outcomes depending on the usability factors and the ways learners perceived their own learning. When conducting VR training, learners interact with both real and virtual spaces through three-dimensional digital representations, receiving sensory stimuli similar to those in reality, based on the interface of core technologies such as a head-mounted display (HMD), computer, motion controller, and gloves. Through this, learners can experience emergency situations that are difficult to replicate realistically, enabling them to feel an enhancement in the effectiveness of their training. VR usability in safety training for flight attendant identifies the key to safety training by increasing recall of training related knowledge or perceived cognitive learning. The reason for this is that learners are repeatedly trained with experiences that closely resemble real life events. Similarly, this study indicated that learners were influenced by positive attitudes, emotions, and values (perceived affective learning) related to the training process and content. It is considered to be interactive by combining information from objects and experiencing the training process through auditory and visual senses, even if it is a virtualized space. However, as Akinbobola and Adeleke (2013) highlighted, even if learners improve job performance and productivity through VR training, this implies that they still face limitations in fully applying skills in the field to respond to emergency situations. In a similar vein, the hypothesis that 'perceived usefulness' significantly affects 'perceived psychomotor learning' was not supported in this study. Second, the results suggest that 'perceived affective learning' is a significant predictor of 'satisfaction with training' and 'organizational support for training', while 'employee feelings about training' did not hold the same significance. The quality of screen images in VR training can create a sense of realism, depicting actual situations, which can improve decompression and fire response capabilities. However, some users in a VR environment might experience cybersickness (McCauley & Sharkey, 1992), which primarily affects disorientation dimensions and oculomotor function (Jerald, 2015). This phenomenon suggests that despite an increased attitude and value toward safety incidents in the VR training process, there is a possibility that emotions toward the training itself could be negative. On the other hand, the perceived learning formed by the flight attendant through repetitive training in crisis situations can lessen the burden of responsibility to ensure the safety of both passengers and flight attendant by realistically applying physical skills. This flow of VR training demonstrates satisfaction at both the organizational level and in individual training experience. Third, it was observed that 'perceived learning' partially affects 'safety behavior'. This finding is related to the study by Neal et al. (2000), which indicates that as employees within an organization become more conscious of various factors, they place a higher emphasis on safety. Overall, as learners undergo VR learning experiences, perceptions of skill and knowledge levels shift, leading to an altered attitude toward acting safely. This suggests potential positive outcomes from the training. Specifically, 'perceived cognitive learning', a sub-factor of perceived learning, significantly affects 'in-role safety behavior'. This is likely due to the fact that the characteristics of VR training offers an environment closely resembling reality.

However, 'perceived psychomotor learning' did not affect 'in-role safety behavior' and 'extra-role safety behavior', which is likely due to the limitations of the content available for VR training. For instance, the emergency situations provided in the current training are limited to actions during decompression emergencies, in-flight fires, turbulence scenarios, and in-flight announcements depending on the situation. In reality, a variety of emergencies can occur on board, so learners might face challenges in immediately performing physical activities in situations that were not covered in the VR training. Perceived affective learning likely has an effective influence on safety behaviors, as it can shape the attitudes and values of flight attendants through VR training. However, in this study, 'perceived affective learning' did not affect 'upward safety communication'. This appears to be a reflection of the airline's specific organizational culture. For instance, from the perspective of flight attendants evaluated by superiors on flight duties, freely conveying their own thoughts related to safety and making suggestions might not be an easy task. This appears to reflect a specific culture inherent within the organization. Lastly, 'safety behavior' has been shown to fully affect 'satisfaction' significantly. For the safety that airlines hold as their top priority, the company requires flight attendants to demonstrate safe behavior through training. Through this process, flight attendants come to grasp the concept and consciousness of safety behavior, demonstrating a proactive approach to improving safety in line with procedures. As emphasized by Fernández-Muñiz et al. (2012), employee safety behavior is a fundamental component for the proper functioning of a company's safety system. Each member believes they are responsible for their actions and becomes more interested in the organization's safety activities. Such safety behaviors were found to have a positive impact on satisfaction. In this study, flight attendants indicated satisfaction with the realism provided by VR training, its learning effects, and the training methods. These results highlight that safety behaviors developed

through VR training significantly contribute to the organization's objectives and the individual's professional development.

The results of this study offer significant implications for administrators. Based on the evidence presented in this research, administrators need to pay heightened attention to intrinsic factors such as VR usability. These elements have shown importance in enhancing flight attendant safety behaviors, perceived learning, and satisfaction when VR is implemented in airline safety training. Therefore, administrators should ensure that the VR training content is not overly complicated, and emphasize its relevance to flight attendants. Strengthening and sustaining the standards of airline safety, open communication, and direct feedback amongst flight attendants irrespective of rank are crucial. As such, promoting upward safety communication and eliminating any potential barriers should be a top priority for administrators. At this time, it is expected that VR training can maximize the training effect if it is applied to each department for training that enhances the understanding of each other's work and creates a sense of presence. Airlines, above all, experience differences in operations due to the job-specific training and experiences of various areas such as pilots, flight attendants, ground staff, and managers. These differences can lead to conflicts in decision-making based on the level of understanding of each department's tasks within the organization. Therefore, when considering safety management strategies, it is crucial not to overlook the integration of Crew Resource Management (CRM) across departments. Expanding VR training content to interdepartmental tasks can also provide opportunities for integrated training, which can enhance the effectiveness of CRM. This study focused on VR safety training at the individual level, but future research should explore team level VR safety training and safety behavior studies. This is because flight operations value not just individual achievements but rely heavily on the collective efforts, cooperation, and harmony of all crews onboard to ensure a safe

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flight. This study provides results specific to a particular airline offering safety training based on VR, thus there are limitations in generalizing the findings. Nevertheless, as various fields are currently attempting to train using VR, including firefighting, medical, aviation, and construction, this study is expected to delineate useful insights for training related to VR training.

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How Does Power Distance Belief Impact Variety-Seeking Behavior? A Moderated Mediation Approach*

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ABSTRACT

Purpose – This research aims to enhance knowledge of variety-seeking behavior by establishing a novel antecedent based on consumer internal characteristics instead of external stimuli. The report also argues that the insights gleaned can illuminate a method to analyze consumer decision-making based on intrinsic motivation. This study evaluated a potential connection between power distance belief and variety-seeking behavior. This study evaluates variety-seeking behavior by brand, color, taste, and fashion preferences. Variety-seeking behavior is essential in understanding consumer choices. This paper aims to find the mechanism of the relation between power distance belief with variety-seeking behavior, along with the boundary condition of variety-seeking behavior.

Design/Methodology/Approach – This study performed three experiments for measurement and hypothesis testing. This study employed analysis of variance, multiple regression, and process macro for moderated mediation testing with SPSS 28.0.

Findings – This research confirms the prediction that higher power distance beliefs tend to elect variety through Study 1, and that risk-seeking mediates the moderation of boredom between power distance belief and variety-seeking behavior through Study 2. The authors conclude by discussing the implications for the application of the theory for managers.

Research Implications – These contributions provide professionals with practical consequences for a variety of marketing tasks, such as market segmentation, product extension and innovation, and advertising guides.

Keywords: consumers' choice, power distance belief, risk-seeking, variety-seeking behavior
JEL Classifications: M30, M31, D91

I. Introduction

In the context of retail purchasing, when people are presented with a choice, the decision will reflect both the current situation and their unique personality (Choi et al., 2006). Marketers and scholars have always defined diversity of choice as consumers selecting the same segments of products with different attributes (e.g., color, size, style, or flavor et al.), changing their choices compared to previous purchases, or purchasing different products in a single shopping trip (Sharma et al., 2010). Variation-seeking behavior is expected to occur when the level of variation is high. Variety-seeking behavior is the tendency to seek change over time, and it continues to attract attention in the retail and shopping industries (Mohan et al., 2012; Murray et al., 2022). Given knowledge about an individual's ideal points for features defining the product class, the selection behavior of an individual is explicable and foreseeable. Nonetheless, because they suggest that these optimum locations are susceptible to random variations, they conclude that behavior is unpredictable (Huber & Reibstein, 1978). This study explored the research questions of:

(a) Does consumer power distance belief influence their variety-seeking choice?
(b) Does boredom matter with the variety-seeking choice?

Since time immemorial, marketing and consumer behavior scholars have been fascinated by individuals with diverse behaviors (Shen & Wyer, 2010). Mohan et al. (2012) revealed that a store's ambience, design, and social factors influence variety-seeking behavior. Additionally, a pleasant mood can influence an individual's propensity to seek variety (Choi et al., 2006). Murray et al. (2022) and Trijp et al. (1996) proved that marketing methods (such as new product introductions, promotions, etc.) can affect the level of variety-seeking behavior. All environmental stimuli and internal states can influence individual purchasing behaviors, such as variety seeking.

Researchers demonstrated that cultural influences significantly impact consumer behavior (McAlister & Pessemier, 1982; Ratner & Kahn, 2002; Yan et al., 2021). Kim and Drolet (2003) showed that individual propensity to seek variation depends on culture: individualism versus collectivism. Nonetheless, the association between power distance belief (PDB) and variety seeking has not been thoroughly investigated. PDB can be a cultural factor in many nations, and can also be stimulated by unique conditions (Tu et al., 2021). In this research, the dimension of the individual is PDB. We hypothesize that persons with a high PDB have a reduced propensity to seek out diverse products (Li & Chen, 2021).

This research aims to enhance our knowledge of VSB by establishing a novel antecedent based on consumer internal characteristics instead of external stimuli. The report also argues that the insights gleaned can illuminate a method for analyzing consumer decision-making based on intrinsic motivation. This study evaluated a potential connection between power distance belief and variety-seeking behavior. We evaluate VSB by brand, color, taste, and fashion preferences. The research concludes by analyzing the boundary conditions of VSB-boredom. The findings of our research provide several additions to the present body of knowledge and clinical practice. Initially, we show that the recent work on PDB provides a fresh theoretical approach to our existing understanding of VSB, as provided by prior studies. Furthermore, we described the mechanism of PDB on variety seeking behavior. Finally, this research discussed the literature on the selection behaviors of customers. These contributions provide professionals with practical consequences for a variety of marketing tasks, such as market segmentation, product extension and innovation, and advertising guides.

II. Literature Review and Hypotheses Development

1. PDB and Variety-Seeking Behavior

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Variety-seeking behavior is the person tendency to seek change over time, and it continues to attract attention in the retail and shopping industries (Mohan et al., 2012; Murray et al., 2022). Given knowledge about an individual's ideal features defining a product class, the selection behavior of an individual is explicable and foreseeable. Nonetheless, because they suggest that these optimum locations are susceptible to random variations, they conclude that behavior is unpredictable (Huber & Reibstein, 1978). Therefore, McAlister and Pessemier (1982) suggested that direct, varied behavior might result from internal (intrapersonal) or external (interpersonal).

Internal influences include the need for the unfamiliar, the alternation between the familiar and the unfamiliar, and information. Sevilla et al. (2019) found that in order to offer a change of pace, or to give an item's usefulness time to recuperate, shoppers choose other items. Specifically, individuals will choose less desirable alternatives in order to vary their choices while experiencing lower levels of pleasure (Kim & Drolet, 2003). Second, group affiliation and personal identity are included in external elements. Preliminary studies found a social cue signaling that the propriety of eating one's preferred foods can alleviate the temptation to select diversity in public (Ratner & Kahn, 2002). Choi et al. (2006) proposed that, because they believe that others be satisfied with repeated use more quickly than they do, consumers may pick a greater range of products for their own consumption than they do for the consumption of others. Clarkson et al. (2013) found that beginners view more assortment diversity as a sign of category expertise and opt for greater assortment diversity when they want a selection to be perceived as demonstrating expertise.

Based on these findings, it is proposed that individuals with higher PDB may prefer more variety in their choices as compared to those with lower PDB, as illustrated in Fig. 1 of the respective study.

The degree to which people expect and accept inequality and hierarchy is known as the power distance belief (PDB) (Hofstede, 2001; Kim & Ko, 2010; Kim & Zhang, 2014). PDB can be part of the national culture (e.g., high PDB countries: China and India; low PDB countries: US and New Zealand), and can be primed (Aw et al., 2021; Tu et al., 2021). Recent findings from a number of studies have shown that PDB affects a wide variety of facets of consumer-related behaviors, such as the promotion of sustainable consumption (Yan et al., 2021), consumer brand preferences (Wang et al., 2021), educational consumption (Tu et al., 2022), new product acceptance (Li & Chen, 2021), switching intention (An et al., 2022) and brand personality evaluations (Wang et al., 2018).

Oyserman and Lee (2007) demonstrated that cognitive content could be influenced by specific semantic, associative, and content networks. This affects how individuals perceive themselves, others, and their environment. People with high PDB tend to uphold established social orders, as Han et al. (2017) noted, while those with low PDB are more likely to challenge authority and embrace innovation, as Yan et al. (2021). Zhang et al. (2010) found that individuals with high PDB exhibit stronger self-control against socially prohibited temptations than those with low PDB. Kim and Zhang (2014) noted that individuals with low PDB seek to express their uniqueness in daily life. Ariely and Levav (2000) observed that Western cultural contexts uniquely affect decision-making behaviors. Therefore, we propose that higher PDB individuals prefer to seek variety as compared to lower PDB individuals (Fig. 1).

H1: Individuals with a lower level of PDB (vs. higher level PDB) are more likely to seek variety.

2. PDB, Risk-Seeking, Boredom, and Variety-Seeking Behavior

People are often risk-averse (Bran & Vaidis, 2020), and decades-long efforts have been made by psychologists, economists, and others to comprehend why humans are frequently risk-seeking following a loss. Grasmick et al. (1993)

found that self-control has six components. They act on their impulses, prefer simple tasks to those complex, are risk-takers, prefer physical activities to those mental, are egocentric, and have a tendency to lose their temper easily. However, we focused on risk-seeking in this study. For example, Forrest et al. (2019, 517) proposed various phrases to discuss risking seeking, such as "reward-seeking", "sensation-seeking", and "thrill- or novelty-seeking", to characterize "the predisposition to seek out unusual, diverse, and highly stimulating experiences, and the readiness to accept risks to obtain them". Similarly, Forrest et al. (2019) showed that risk-seeking is the propensity to be "adventurous", and to pursue "exciting, dangerous, or exhilarating" behaviors. Risk-seeking is characterized by a desire to seek out risky, exciting, and rewarding pursuits (Crum et al., 1981). In recent research, risk-seeking tendencies impact financial decisions (Yue et al., 2020), impulse buying (Zhou & Gu, 2015), experiential optional (Mittal et al., 2019), and gain frame (Habib et al., 2015).

As a personality characteristic, boredom propensity has been associated with a wide range of negative qualities and emotions. These include despair, hopelessness, anxiety, and narcissism. It has also been linked to increased self-consciousness and feelings of anger and distrust (Brotherton & Eser, 2015; Fahlman et al., 2013; Gardiner, 2012; Tutzer et al., 2021). People who are bored face a variety of circumstances. They are bored at work due to a lack of social stimulation or a lack of challenge; they are bored at home due to loneliness, exhaustion, and a lack of money. The reason why individuals constantly feel bored is the loss of mobility, motivation, and purpose (Martin et al., 2006). Individuals experiencing boredom report feeling pressured, time moving slowly, imprisonment, and exhaustion. In order to alleviate this boredom, they are always seeking new activities, establishing objectives, and contemplating suicide (Martin et al., 2006).

Aw et al. (2021) demonstrated that individuals with a high PDB have a larger desire for closure than those with a low PDB. This refers to the demand for a swift conclusion to an ambiguous situation or problem, and intolerance for ambiguity. People in high (as compared to low) PDB cultures tend to be less flexible, less receptive to change, and more fixed in their thoughts and attitudes (Zhang et al., 2010). High PDB individuals tend to contain the recent situation and safe conditions. Scholer et al. (2010) suggested that a conflict below the break-even point between a desire to avoid negative outcomes (i.e., the dispositional motive) and to assure some minimal benefit (i.e., a situationally influenced ambition level) results in risk seeking and risk aversion in security-oriented persons. Therefore, those with a greater PDB tend to take risks. In contrast, those with lower PDB are often risk-averse. Risk is related to truth-seeking activity, which may be an extension of various psychological characteristics (Murray et al., 2022). Some research has shown that when it comes to long-term consumption, diversification may be used as a risk mitigation approach (Choi et al., 2006; Mohan et al., 2012; Sevilla et al., 2019). When making consumption choices that will occur over a longer period, individuals might purchase various items to adapt to any changes in taste/needs throughout consumption (Murray et al., 2022). An example of this would be a person that buys a six-pack of several flavors of drink to ensure that they may satisfy any taste craving during the week. If they only purchased six packets of vanilla and the following day wanted strawberries, they would be in a undesirable situation (Ratner & Kahn, 2002).

As humans need a constant ideal level of stimulus (Tutzer et al., 2021), when people are bored, they may have a strong urge to seek out something interesting and engage to obtain a greater degree of arousal, such as incompetent driving (Dahlen et al., 2005), gambling (Tutzer et al., 2021), and certainly, variety seeking. Variety seeking, which is only the alternating of known options, will supply consumers with the excitement they need and help avoid monotony (Steenkamp & Baumgartner, 1992). Participants that applied the same choice criteria repeatedly, which would lead to boredom, picked more diverse goods in the subsequent assignment (Shen & Wyer, 2010). Therefore, the

inclination toward monotony influences the need for variation. Moreover, this study believes that persons with lower PDB and prone to risk-seeking would choose to seek diversity. Therefore, we propose the following hypothesis and present the conceptual framework in Fig. 1.

H2: Boredom moderates the mediating effect of risk-seeking on PDB and variety-seeking behavior.

Fig. 1. Conceptual Model
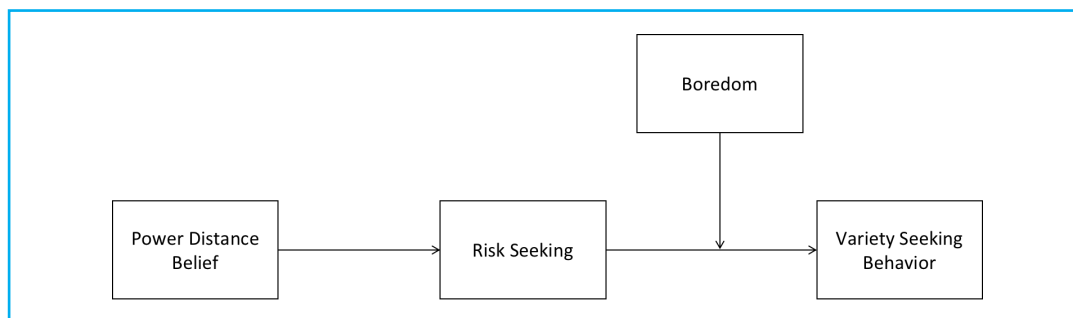
III. Study 1: PDB and Variety-Seeking Behavior

The objective of the research is to first examine the connection between power distance belief and variety-seeking behavior (H1).

1. Method, Experiment Procedure, and Measurement

Eighty sojum.com (the biggest marketing research platform in China) members agreed to participate in the research in return for a nominal monetary reward (Mage = 33, SD = 4.4, Female = 57.5%).

Procedure. Participants were randomly allocated to one of the experimental conditions and instructed to perform two seemingly unrelated tasks. Participants began by completing the PDB manipulation. Next, they decide which items to choose from a variety of commodities in a shopping setting. Finally, they provided demographic information, including gender, age, and education.

PDB manipulation. In the priming experiment, all participants were instructed to read a statement taken from Hofstede's (2001) definition of PDB:

"There should be an order of inequality in our society in which everyone has a proper position; this order protects the high and the low (p. 29).". After reading these phrases, participants describe their current emotions using three items by Zhang et al. (2010) (*a* = 0.873). The items were "At present, I mostly believe that...'; "At the time, I feel that...'; and "At the forefront of my mind are ideas that concur with the statement that...", with 1 "Social hierarchy is important" and 5 "Social equality is essential" for all three items. All three questions were rated in reverse, such that high scores reflect a more substantial confidence in power distance belief.

Variety-seeking behavior. Variety-seeking behavior was measured by the scales of Murray et al. (2022). The participants were instructed to investigate a range of choice scenarios in which they imagined themselves in a shopping environment wherein they had to decide between four options. The participants were then shown a vision of four alternative choices and asked to offer a score between 1 and 4 for each item, indicating the number of each they would choose. Each participant responded to a total of 10 instances. The nature of the options varied from scenario

to scenario and was intended to fulfill a range of outcome goals, with options spanning brands, colors, preferences, and styles. A male and female version of the question was only shown depending on the participant's answer to the gender question for those product categories considered gender-dependent in a realistic shopping scenario. Table 1 outlines each circumstance's pertinent product categories, alternatives, and gender. Across all situations, purchasing a package of four items had the highest financial return. This prevented respondent financial worries from affecting their choices. Moreover, while selecting brands for the multiple-choice questions, we only evaluated brands that frequently featured on the various 'top 5 brands in China' lists released by online marketing media or firms that appeared in the most popular sections of major retailers in China (Carrefour, RT-MART, CR Vanguard, and others). This process ensured that participants chose between brands with equivalent levels of awareness and prior experience.

Variety was determined by counting how many unique alternatives were selected for the four-product package. For instance, if a participant said that they would include one of each choice, their score for diversity would be four (high variety). If they answered they would choose four of a single item, their score for variety would be 1 (no variety). The female participants answered the male's question. They could choose the item "I'm female. I shouldn't answer this question". Similarly, the male participants answer the female's items. They can choose the item "I'm male. I shouldn't answer this question". This resulted in ratings ranging from 1 to 4 for each scenario, which was summed to provide a variety of scores for the various sorts of options (brand, flavor, style, and color). In addition, a total variety score was determined by putting the ten scenario ratings together.

Table 1. Experiment Item

Product Category	Number of Choices	Brand	Gender
Juice	Flavor (same brand with different flavor choices)	Minute Maid	Both
Chocolate	Brand	Dove, Snickers, Ferrero, Aficion	Both
Yogurt	Flavor (same brand)	Mengniu	Both
Energy Drinks	Brand	Red Bull, Mizone, Dong Peng Cocktails, HI-TIGER,	Both
Shampoo	Brand	Head & Shoulders, Clear, Pantene, Rejoice	Female
Shaving Cream	Brand	L'Oréal, Nivea, Gillette, Apache	Male
Male Socks	Color (no brand)	None	Male
Female Socks	Color	None	Female
Male Tiers	Color	None	Male
Neck Scarfs	Color	None	Female
Male Deodorant	Flavor	None	Male
Female Deodorant	Flavor	None	Female
Male Tops	Style (no brand, same color)	None	Male
Female Tops	Style	None	Female
Male Swimwear	Style	None	Male
Female Swimwear	Style	None	Female

2. Empirical Results

After all variety ratings were computed, each participant was assigned four distinct variety scores: brand, flavor, style, and color. Several regression studies were conducted to determine whether or not power distance belief can predict VSB (H1). The continuous variable of power distance belief was regressed against the continuous variables of the combination, brand, flavor, and color-based varieties in each of the regressions. In each of the regressions, adjustments were made to account for the effects of gender, age, and education. The results shown in Table 2 demonstrate that PDB accurately forecasts VSB. Lower PDB was associated with greater levels of variety when all different situations were taken together (b = -.36, p < 0.01), as well as diversity

when decisions were made based on brand (b = -.48, p < 0.01), flavor (b = -.33, p < 0.01), and style (b = -.23, p < 0.05). However, the relationship between PDB and color-based variety is not significant (β = 0.19, P=0.088).

3. Discussion

Study 1 indicates PDB negatively predicts variety-seeking behavior. The results show that PDB affects total variety, brand-based, style-based, and flavor-based choices. However, PDB does not impact color-based choice. A variety choice could bring hedonic value and stimulation for individuals. Color-based varieties do not provide the demand of hedonic stimulation. In sum, high (vs low) PDB individuals tend to exhibit low (vs high) VSB.

Table 2. Study 1 Regressions

	Model 1		Model 2		Model 3		Model 4		Model 5	
	DV: Total Variety		DV: Brand-based Choice		DV: Flavor-based Choice		DV: Color-based Choice		DV: Style-based Choice	
	b	t	b	t	b	t	b	t	b	t
Constant	33.78	5.02	12.14	6.45	10.70	4.54	5.51	3.30	5.42	3.06
Control variables										
Gender	-0.19	-1.83	-0.2	-2.03	-0.22	-2.08	-0.13	-1.18	-0.10	-0.93
Age	0.12	1.13	0.09	0.84	0.12	1.09	0.14	1.20	0.10	0.82
Education	-0.09	-0.78	-0.07	-0.73	-0.06	-0.52	-0.13	-1.14	-0.05	-0.43
Predictor										
PDB	-0.36	-3.43**	-0.48	-4.89**	-0.33	-3.08**	-0.19	-1.73	-0.23**	-2.07*
Adjusted R^2 (%)	13.6%		24.2%		11.9%		2.9%		2.2%	

Note: *p<.05, **p<.01.

IV. Study 2: The Role of Boredom

The aims of Study 2 were third-fold. First, we aimed to test the main effect again. Second, we assessed the mediator of risk-seeking between PDB and VSB. Third, we examine the boundary condition of the main effect.

1. Method, Procedure, and Measurement

One hundred twenty individuals from the website sujom.com participated in the survey and completed it in exchange for a token monetary payment (M_{age} = 37, SD = 5.2, Female = 54.6%)

Procedure. The initial steps consisted of participants completing the PDB check. Next, a measurement of respondent risk-taking mentality was performed. The measure of boredom was then completed by everyone. In the end, they come to the conclusion that they will choose things from a variety of goods when they are shopping.

PDB. According to Zhang et al. (2010), Study 2 measured via an 8-item power distance belief scale (*a* = 0.93). All items included "Conformity ought to be of the utmost importance to us as citizens; "It is wonderful to have a manager that can explain to subordinates the rationale behind their actions and respond to any queries those subordinates may have"; "It is important for managers to encourage their employees to disagree with them"; "Working with supervisors who have the expectation that their employees would faithfully implement decisions without questioning them is enjoyable for me"; "When it comes to issues that are directly relevant to their jobs, managers have the authority to demand compliance from their subordinates"; "It is important for workers to have a healthy respect for their managers and supervisors"; "Working with a boss who discusses pending choices with his/her/its subordinates is one of my favorite things to do"; and "It's possible that arguing with your manager can help you perform better on the job" (1 = "strongly disagree" to 5 = "strongly agree").

Risk seeking. We sought to measure the one element of self-control of risk-seeking attitudinal measure by Tittle et al. (2003) (a = 0.94). With the use of a five-point scale that ranged from strongly disagree to strongly agree, the participants were asked if they (1) believe "life with no danger in it would be too dull"; (2) if they "enjoy new and exciting experiences, even if they are a little frightening or unusual"; and (3) if they enjoy "enjoy taking risks".

Boredom and VSB. Participant levels of boredom was assessed using the four-item, five-point scale derived from Fahlman et al. (2013) (α = .92). All items were, "At this time, I'm experiencing boredom; Right now, I have the impression that everything in life is dull and uninteresting to me"; "At the time, I have the impression that I am caught in a circumstance in which I am irrelevant"; and "I have the impression that what I'm doing right now isn't contributing anything positive to my life in any way", raging from 1 = "strongly disagree" to 5 = "strongly agree". Higher ratings indicated a greater inclination to be bored. The VSB scale is the same as Study 1.

2. Empirical Results

This research examines if boredom influenced the interaction between PDB and risk seeking on VSB. The independent variable was PDB, the mediator was risk-seeking, the moderator was boredom, and the dependent variable was VSB. We tested the mediated moderation model using the bootstrapping procedure described by Preacher et al. (2007) (PROCESS model 14). This approach includes procedures that compute a 95% CI around the indirect effect. As we detected, the indirect effect of PDB on variety-seeking behavior through the interaction between risk-seeking and boredom was significant (b = .74, SE = .28, CI95% = [.28, 1.40]). In addition, the high boredom condition moderates the mediated effect of risk-seeking in the relationship between PDB with VSB (b = 1.73, SE = 0.51, CI95% = [088, 2.85]), indicating that the effect of PDB on variety-seeking behavior is mediated by risk-seeking.

Table 3. Conditional Indirect Effect for Study 2

	b	SE	LLCI	ULCI
Mean	.85	.34	.28	1.60
High (+1SD)	1.73	.51	-2.85	-.84
Low (-1SD)	.028	.45	-1.01	.82

Index of Moderated Mediation				
	Index	BootSE	BootLLCI	BootULCI
Borden	.72	.29	.28	1.40

Note: *p<.05, **p<.01, ***p<.001.

3. Discussion

Study 2 demonstrated that when a consumer is in a high boredom condition, consumers that are risk-seeking will seek product variety. In addition, a higher PDB consumer will have a risk-averse attitude and will not prefer variety-seeking behavior.

V. Study 3: PDB at the National Level

Study 3 reexamines the moderation of risk-seeking interdependency between PDB at the national level, VSB, and the moderated mediation of boredom.

1. Method, Experiment Procedure, and Measurement

One hundred twenty Chinese samples from the website sujom.com participated in the survey and completed it in exchange for a token monetary payment (M_{age} = 37, SD = 5.2, Female = 54.6%). One hundred twenty American samples from the website Cloudresearch.com participated in the survey and completed it in exchange for a token monetary payment (M_{age} = 40.2, SD = 40.4, Female = 53.7%).

Procedure. The initial steps consisted of the participants completing the PDB check. Next, all respondents rated the risk-taking and boredom measurement instrument. In the section for the variety shopping task, all were asked to choose items from a variety of goods when shopping. In the final section, all respondents provided gender and age information. ANOVA results showed that Chinese PDB (M_{CN} = 3.44, SD = 0.97) was higher than American (M_{US} = 2.42 , SD = 0.38; $F_{(1, 238)}$ = 116.07. p-value < 0.001). When performing statistics analysis, this study treats China as High PDB, and USA as Low PDB.

PDB. According to Zhang et al. (2010), Study 3 measured PDB using the 8-item power distance belief scale (a = 0.87), with items that are the same as Study 2.

Risk Seeking. We sought to measure the one element of self-control of risk-seeking attitudinal measure by Tittle et al. (2003) (a = 0.93), with items the same as Study 2.

Boredom and VSB. Participant levels of boredom were assessed using the four-item, five-point scale derived from Fahlman et al. (2013) ($α$ = .93), with items the same as Study 2. The VSB scale was the same as Study 1.

2. Results

This research examines if boredom influenced

the interaction between PDB and Risk seeking on VSB. The independent variable was PDB, the mediator was risk-seeking, the moderator was boredom, and the dependent variable was VSB. We tested the mediated moderation model using the bootstrapping procedure described by Preacher et al. (2007) (PROCESS Models 4 and 14). This approach includes procedures that compute a 95% CI around the indirect effect. As we predicted, the indirect effect of PDB on variety-seeking behavior through the interaction between risk-seeking and boredom was significant (b = 0.23, SE = 0.10). When people are in a high boredom condition, boredom positively moderates the relationship between risk-seeking with VSB (b = .62, SE = 0.15, 95%CI = [0.29, 0.42]); this did not occur in the low boredom condition. In addition, the high boredom condition moderates the mediated effect of risk-seeking in the relation between PDB with VSB (b = 0.13, SE = 0.07, CI95% = [0.03, 0.28]), indicating that the effect of PDB on variety-seeking behavior is mediated by risk-seeking.

Table 4. Regression Results for Study 3

| | Risk Seeking | | VSB | |
	b	SE.	b	SE.
PDB	-0.59***	0.12	-0.26	0.57
Risk Seeking			1.45***	0.40
Boredom		.	1.54***	0.42
Risk Seeking* Boredom			1.26***	0.30
R^2	0.17		0.31	

Note: *p<.05, **p<.01, ***p<.001.

Table 5. Moderation Effect Results

| | Risk seeking→VSB | | | | PDB→Risk-seeking→VSB | | | |
	b	SE	LLCI	ULCI	b	SE	LLCI	ULCI
Moderation Boredom								
Mean	1.45	0.40	0.66	2.24	-0.85	0.33	-1.57	-0.29
High (+1SD)	2.95	0.49	1.97	3.92	-1.73	0.51	-2.85	-0.84
Low (-1SD)	-0.05	0.57	-1.18	1.09	-.028	0.45	-0.78	1.04

3. Discussion

Study 2 demonstrated that when a consumer is in a high boredom condition, consumers that are risk-seeking will seek product variety. In addition, higher PDB consumers will have a risk-averse attitude, and will not prefer variety-seeking behavior.

VI. Conclusions

1. General Discussion

Through the use of two studies, this research aims to offer a better understanding of consumer choice in relation to the distinct tendencies of power distance belief. Previous studies have approached VSB via the lens of shopping mindsets, inspired by the presumption that a person's shopping orientation will influence the decisions they make when shopping. This paper provides an extra account of this body of work using a framework that focuses on a cultural aspect that is formed independently from product-related characteristics. With this method, we are able to investigate the phenomena from a point of view that has not been thoroughly investigated in the past. According to this study, the mechanism behind the surface of the link between PDB and VSB is consumer willingness to take risks. This is the mechanism that lies below the surface of the connection between PDB and VSB. Variety in behavior necessitates exposure to a degree of danger associated with an unknown experience; hence, those interested in taking risks are more likely to choose variety.

In each of our experiments, we presented respondents with many option scenarios, allowing the autonomy to choose things based on the intrinsic worth of the products rather than on economic or marketing considerations. The scenarios were constructed such that none of the product options had a higher utilitarian value than the others (for example, purchasing four units of a single product would have the same value in terms of functionality as purchasing one unit of each of the four goods). This meant that the selection of any variety was based on the value that that particular variety supplied to a buyer. Previous research has established that when people make a variety choice, they will face perceived risk (Murray et al., 2022). Individuals with high PDB tend to have stable conditions and are risk averse (Lee et al., 2020).This concept was validated by the product judgments of all investigations.

The first study confirmed the first hypothesis, while the larger set revealed other intriguing outcomes. First, color-based variety did not seem to be associated with PDB. It may also indicate that color-based diversity delivers a diminished risk-reduction advantage. Therefore, consumer judgment on color selection is irreverent. Moreover, the main effect of PDB on total variety was demonstrated. Higher PDB tended to choose the same products in a set of products because they preferred not to change their condition.

The second study confirms our prediction that the attitude of risk-taking mediates the relation between PDB and total variety-seeking behavior. In addition, Study 2 found that level of boredom could moderate the relationship of the interaction of PDB and risk seeking and VSB. High PDB individuals that tended to be averse risk did not prefer to choose a variety of products. When individuals experienced low boredom, the mediated effect of risk-seeking decreased significantly. In contrast, for consumers that experienced high boredom, the mediated impact of risk-seeking increased significantly.

2. Implications

The findings of this study enriched related literature and provided the guidance on retailing marketing for marketing managers. In this section, this study discusses theoretical and practical implications.

Theoretical Implications. There are a variety of reasons why VSB is of significant importance to marketers, and this article outlines some of the field's most important implications. The finding contributes to choice literature. When consumers decide on shopping trips, they will be affected by a number of elements, such as personality, stimulation, and cultural factors. This study focuses on the cultural dimension that contributes to VSB work. Prior research indicates the impact of individualism and collectivism (Kim & Drolet, 2003). Our research demonstrates that lower PDB individuals prefer to choose overall variety. However, the effect of PDB on color diversity

choice is not significant. This research details the category of variety, such as color, flavor, style, and brand. It examines in depth the connection between power distance belief and variety-seeking behavior.

Secondly, this study contributes to the existing literature on power distance belief. Existing research is mainly concerned with mediating the need for structure or closure (Lee et al., 2020). It has argued that high PDB individuals will have a high need for stability and prefer to close themselves. This paper provides evidence to identify that lower power distance belief individuals tend to seek risk. Individuals with high power distance beliefs prefer to keep a stable condition, and tend to be averse to risk.

Finally, it demonstrates that boredom is the link between PDB and diversity seeking. Previous research has shown that PDB may impact consumer behavior through motivational (such as the need for status) and cognitive channels pertaining to order preference. However, the findings of this study suggest that PDB can also influence consumer behavior through individual self-control factors-seeking risk. At the same time, an individual's emotional state will regulate the mediating mechanism. Specifically, we propose that low PDB consumers may be more likely than high PDB consumers to seek variety in a state of boredom. The second study further elucidates the function of boredom by defining a boundary condition. It was discovered that customers with lower PDB were more receptive to feelings of boredom in response to a need for further research on culture and consumer sentiment (Zagladi et al., 2015).

Practical Implications. This investigation also has management and practical implications. Retailers operating in multicultural marketplaces may be required to tailor merchandise to the cultural background of their customers. In a society with a low PDB, shops may not require additional product diversity, and may instead concentrate on well-known or dominating items. In contrast, shops in cultures with low PDB may need to sell a greater variety of items since customers with low PDB are more inclined to vary their selections. However, keeping a broad variety of stock may be expensive for stores and stressful for small merchants. In addition, marketers can create a more colorful environment to decrease the state of boredom to stop high PDB VSB. Finally, managers can use adverting to let consumers feel the need to choose other brands and take more risks. For example, our product has a patent right or cannot be imitated.

3. Limitations and Further Research

This study has several limitations. Firstly, it chooses limited product categories. Further research can examine whether the intangible and tangible products have different results. Because the life timers of intangible and tangible products are different, people may make a choice according to time. Secondly, the measurement and operation of the PDB were tested in China. By gathering data from different nations, such as those where the PDB varies from that of the Chinese participants, future studies may examine the robustness of the primary results. In China, a stream of research has been conducted on blockchain (Wu & Jin, 2022), the value of Internet companies (Xiong, 2022), ESG (Zhu, 2022), and Fintech (Cheng, 2022; Gao & Jin, 2022). The current study could be extended by investigating the relationship between PDB, ESG, and Fintech. Thirdly, this study did not test whether store environment can manipulate the boredom state of consumers to influence the diverse choice behavior of consumers. Future studies will examine whether the strategy will be useful in increasing consumer loyalty. Fourthly, self-image congruence (Tran & Kim, 2022) and cultural openness (Lee & Robb, 2021) are important factors that affect consumer evaluations of products and services. This study could be extended considering self-image congruence as a prediction variable. Finally, many factors are related to power distance, like conformity, social norms, psychological distance, and expectations (Durkalo et al., 2021). Because psychological distance influences consumer purchase intentions, we will extend our research by investigating the effect of the above-mentioned variables in further research.

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