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Explaining Blood Donor Loyalty Intentions through a Self-Determination Theory Lens: Empirical Insights from Indonesia

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Abstract. Applying self-determination theory (SDT), this study analyzes how amotivation, external regulation, introjection, identification, integration, and intrinsic motivation dimensions along with related constructs of ignorance, reward, ego, social value, belief, and pleasure in predicting blood donor loyalty. Survey data from 373 repeat donors in East Java, Indonesia was analyzed using structural equation modeling. Results demonstrate ignorance, pleasure, belief and perception significantly influence loyalty while reward, ego and social value indicate insignificant effects. However, social value gains significance when perception is considered as a mediator. Findings provide a validated framework for understanding and enhancing donor loyalty through motivational and perceptual factors.

Keywords: Self-Determination Theory, Ignorance, Reward, Ego, Social Value, Belief, Pleasure, Perception, Loyalty

1. Introduction

Blood services is aimed to ensure the availability of blood stock for the needs of the community. However, it appears to be insufficient, as according to the data from WHO, blood availability progresses slowly in many parts of the world, thereby putting patient safety at risk (WHO, 2020). The availability of donors, as stipulated by the WHO, is determined to be approximately 1% of the population in each respective region (WHO, 2010), Therefore, Indonesia needs an increase in donor availability, as indicated by data from the Central Statistics Agency (BPS) and the Indonesian Cabinet Secretary, showing a consistent annual increase in the Indonesian population (Sekretaris Kabinet Indonesia, 2021) (BPS, 2023b). The need for increased donors is also essential due to stock shortages in Indonesia (Kompas, 2020). The challenge arises because blood cannot be stored for an extended period, limiting the production of blood products (Ministry of Health of Indonesian Republic, 2015). Mass production is not feasible due to the short storage life, while patient cyto needs are unpredictable due to the presence of sudden surgical events or critical patient illnesses which cause disruptions in production planning. Donors play a crucial role in passing health screenings, making the quality and quantity of donors the donor's responsibility. Therefore, In the field of blood donation, the correlation between management approaches and donor loyalty is very important to maintain blood resources. Good management has a big influence in retaining donors and increasing donor satisfaction. This is because blood is a product of the human body, making it highly dependent on the donor's motivation to maintain their health in line with production standards and to consistently be motivated to donate when needed.

In the field of management, according to Terry, management functions consist of planning, organizing, actuating and controlling. The management function involves data analysis to estimate blood donor needs, resource allocation, monitoring changes in donor behavior and collaborating with external partners such as private organizations and government institutions.

Donors, as customers of the Indonesian Red Cross (PMI), contribute blood as the raw material for the produced products. Donors are not merely consumers as described in conventional marketing theories. The existing concept has defined consumers as mere recipients of products, services, and other resources (Mowen et al., 2001). Donors possess unique characteristics; they are not only recipients of services but also play a role as providers of the raw product, which is blood, originating from their own bodies. The uniqueness of Indonesian Red Cross' consumers lies in donors, justifying that they are not merely consumers but also serve as co-producers and co-participants of the organization. Efforts to establish donors as co-producers and co-participants begin by tapping into the voices of donors to build their loyalty. This involves identifying customer needs, as well as providing insights into collaborative production and methods to enhance capabilities. Consequently, blood acquisition is not just a patient's need but becomes a societal requirement for improved health and a donor lifestyle (Azizah et al., 2022).

Referring to the need for donor loyalty, the theory of motivation that is deemed worthy to be explored for predicting donor engagement as co-producers and co-participants in blood donation is the Self-Determination Theory (SDT). SDT, as a motivational theory, can shape and control motivation not solely from external factors but emphasizes the tendency for autonomous motivation within oneself. SDT has been deemed as a macro theory concerning motivation, emotions, and personality within a social context (Van den Broeck et al., 2021; Engström & Elg, 2015). The use of the SDT provides a comprehensive opportunity to address motivational issues related to blood donation. The continuum range of variables within SDT includes amotivation, external regulation, introjection, identification, integration, and intrinsic motivation. These are synthesized into elements such as indifference or ignorance, reward, ego, social value, belief, and pleasure. This addresses the issues being examined, namely donor motivation, as an effort to enhance donor loyalty as co-producers and co-participants. It is expected to identify the donor's voice due to its proven effectiveness, despite ongoing debates arising from research gaps.

Perception is crucial to be explored to enhance consumer loyalty (Riofrio-Carbajal et al., 2023), thus fostering donor loyalty. However, negative perceptions are often heard to hinder blood donation.

An initial study was conducted with several samples, revealing that many respondents had concerns about needles causing pain and discomfort during the donation process (Riofrio-Carbajal et al., 2023). However, these interview results were inconsistent with research findings stating that such perceptions were not proven to influence donation intentions (Vincent et al., 2019). These perceptions are undoubtedly related to the Indonesian Red Cross' service capabilities, which encompass professionalism to ensure that medical professionals can carry out the process. Recently, Gahan et al. (2022) also conducted a study to analyze blood donation from ethnic minority. The findings demonstrate the multifaceted and interrelated nature of the motivators, facilitators, and barriers experienced by ethnic minorities to become and remain a blood donor, while also suggest to analyze the underlying factors for blood donors' loyalty. Furthermore, Williams et al. (2019) in their study have integrated SDT and theory of planned behavior (TPB) to predict blood donors' intention, but they have not yet explored the factors that can lead to loyalty. Thus, the aim of this study is to explore factors influencing loyalty by examining dimensions of the SDT and the mediating role of perception. In more detail, this study shows how amotivation, external regulation, introjection, identification, integration, and intrinsic motivation dimensions along with related constructs of ignorance, reward, ego, social value, belief, and pleasure in predicting blood donor loyalty. Additionally, this study addresses gaps from previous studies regarding the need to examine loyalty, especially in the health aspect, i.e., blood donors.

2. Literature Review and Hypotheses Development

2.1. Self-Determination Theory

Self-determination theory (SDT) and managament practice is a psychological framework which focuses on human motivation and personality development (Ryan & Deci, 2017). This theory explores the factors that drive individuals to engage in certain behaviors and pursue specific goals. SDT distinguishes between different types of motivation, namely intrinsic motivation, extrinsic motivation, and amotivation. Ryan & Deci (2017) stated that in the self-determination theory (SDT), amotivation plays a crucial role in predicting behavioral interest. Amotivation, as mentioned by Williams et al. (2019) is described as someone who have a reduction in the motivation to initiate or persist in goal-directed behavior that exists within their internal factors in a self-management context. Amotivation attributes include perceived lack of competence, lack of value, and feeling irrelevant (Ryan & Deci, 2020). Someone without motivation may engage in an activity, possibly doing it out of appreciation for that activity (den Broeck et al., 2021). This theory has been widely applied across various domains, including education, work, sports, psychotherapy, and healthcare. Williams et al. (2019) carried out a study using SDT to understand individuals' intention to donate blood. The findings indicated that integrating SDT is a useful approach in donor research as it allows scholars to understand how motivational orientations impact blood donors intentions.

2.2. Hypotheses Development

In the context of blood donation, amotivation implies that an individual lacks intention, knowledge, and understanding about donation due to ignorance of blood donation. Consequently, they remain unaware of the various benefits of blood donation or another knowledge related to donation. Therefore, amotivation in blood donation is synthesized with ignorance. The research findings from Vincent et al. (2019) indicate that good motivation is not affected by the perception of donation barriers. It can be concluded that someone who lacks concern for donation has a negative impact on perception. In line with Vincent's research, Mohammed & Essel (2018) suggested that negative perceptions act as barriers and reduce donation motivation. Furthermore, Gilal et al. (2019), Rosli & Saleh (2022), William (2018), and Manger et al. (2020) stated that self-determination influences donor perceptions and loyalty. Therefore, the first hypothesis is proposed as follows:

H1a. Ignorance has a positive effect on perception
H1b. Ignorance has a positive effect on loyalty

Furthermore, in the field of management external regulation can also depend on a reward. As stated by Ryan & Deci (2017), external regulation can shape behavior through externally controlled rewards and punishments. This external regulation can be considered a motivation in the form of a reward or punishment. This motivation arises from influences or pressures external to the human self. External regulation, such as extrinsic motivation, is defined in the SDT as instrumental motivation where all activities are aimed at achieving desired outcomes but can be separated from the behavior itself (Gilal et al.., 2019). Blood donation is not externally coerced, making it more appropriate to use the construct of reward as the existence of external regulation in blood donation. Heider (1958:126) stated the theory of attribution of an individual's behavior, which is determined by whether the behavior is influenced by internal or external factors, either from oneself or others. Ryan & Deci (2017) explained that behavior is externally regulated if motivated by external rewards or punishments. Behavioral regulation through externally controlled rewards has been a primary focus in behavioral psychology.

The research results from Al-Jubari (2019), Widyarini & Gunawan (2018), Braga de Oliveira Friaes et al. (2023), and M'Sallem (2022) indicate significant results of external regulation on perception. The study from Vincent et al. (2019) shows that good motivation does not affect the perception of donor barriers. Therefore, it can be concluded that someone who receives a gift or faces sanctions may influence perception. According to Mohammed & Essel (2018), good motivation will affect or enhance perception. The research findings from Williams et al. (2019) also explains that rewards have an influence on the perception of donating. Rahi & Abd. Ghani (2019) and Widyarini & Gunawan (2018) suggested that external motivation marked by rewards has an influence on repeated intentions. Additionally, Gilal et al. (2019), Manger et al. (2020), and Rosli & Saleh (2022) provided research results that external regulation can influence behavior. Previous study from Williams et al. (2019) shows that external regulation has a positive effect on the loyalty of donors as co-producers and co-participants. This aligns with France's (2017) explanation that externally regulated motivation with rewards has a reliable and valid influence.
H2a. Reward has a positive effect on perception.
H2b. Reward has a positive effect on loyalty.

Furthermore, motivation from introjected regulation is a form of pressure, but this pressure originates from one's internal self. Introjected regulation is motivation generated by ego strength. The embarrassment of not doing it is caused by the surrounding environment doing it (Gilal et al.., 2019). Heider (1958:126) mentioned motivation arises due to wanting to establish or maintain something like reputation and maintaining courage. Attributes in introjected regulation include ego involvement. In short, ego involvement focuses on one's own ego and seeks approval from others (Ryan & Deci, 2020). In this regard, introjection in blood donation is more relevant to the ego continuum, which will be seen as a construct to build loyalty.

Al-Jubari (2019), Widyarini & Gunawan (2018), M'Sallem, (2022), and Braga de Oliveira Friaes et al. (2023) obtained significant results regarding the relationship between motivation and perception. Vincent et al.'s (2019) study indicates that good motivation does not affect the perception of donor barriers. In line with Vincent's et al. (2019) and Mohammed & Essel (2018), it is explained that negative perceptions act as barriers and reduce donation motivation. Thus, if the motivation is good, the perception will also be positive.
H3a. Donor ego has a positive effect on perception.
H3b. Donor ego has a positive effect on loyalty.

Motivation from identified regulation stems from considering something as important and aligning

with one's values. Identified regulation involves engaging in an activity because it holds personal significance. (Van den Broeck et al., 2021) Society always has agreed-upon social values to be implemented as justifications for good or bad deeds. Identified regulation is synthesized into social value. Attributes of identified regulation consist of alignment with personal significance, consciously valuing the activity, and self-support for the goal (Ryan & Deci, 2020). Heider (1958:126) explained that behavior is motivated because people do it either because they think they should or feel obligated to do it. Other motivations arise from goals to be achieved, even if they involve unpleasant things. Ryan and Deci (2017) explained that behavior is carried out because someone needs self-approval derived from the approval of others and how others assign values. Previous research by Vincent et al. (2019) shows that good motivation does not affect the perception of donor barriers. Therefore, it can be concluded that someone who receives a gift or faces sanctions may influence perception. In line with this research, Mohammed & Essel (2018) suggested that good motivation will affect or enhance perception.

H4a. Social value has a positive effect on perception.
H4b. Social value has a positive effect on loyalty.

Integrated regulation involves assimilating new things with one's values and needs (Engström & Elg, 2015). Integrated regulation stipulates that an individual brings values or regulations into harmony with other aspects of oneself, including basic psychological needs and other identifications (Ryan & Deci, 2017). Integrated internalization is experienced fully and authentically, becoming a deeply rooted belief. Attributes of integrated regulation include alignment, synthesis of identification, and consistency with identification (Ryan & Deci, 2020). Values prevalent in society, whether from religion, social values, or culture, are internalized by humans, becoming deeply rooted beliefs that form trusted life goals. It has been explained that integrated regulation is life goals derived from values (Zycinska & Januszek, 2021). Values integrated within oneself create a belief in those values, leading to actions being taken because of the belief that those actions align with one's life goals. From this exposition, believed becomes the synthesis of integrated regulation, crucial for the blood donor as a co-producer and co-participant. This aligns with the research findings of France (2017), which explain that identified motivation influences blood donation. Blood donation is considered important because it holds values in assisting others (France et al., 2017).

H5a. Believed has a positive effect on perception.
H5b. Believed has a positive effect on loyalty.

Intrinsic regulation is the motivation that arises whenever individuals find pleasure and interest in a task (Engström & Elg, 2015). Intrinsic motivation arises from satisfaction and comfort (France, 2017). Intrinsic motivation serves as an energy source oriented towards growth, guiding individuals to take on challenges optimally (Ryan & Deci, 2017). Intrinsic regulation in the blood donation process occurs when individuals are motivated to enjoy blood donation, find joy in the activity, and feel comfortable. Therefore, intrinsic regulation is synthesized into pleasure. The research results from Williams et al. (2019) explain that autonomy marked by intrinsic motivation has an influence on the perception of donating. The influence of motivation on perception is also evidenced by D'Aquila et al. (2019). Intrinsically motivated behavior is driven by inherent interest, enjoyment, and satisfaction (Ryan & Deci, 2017). Heider (1985:126) explained that the most apparent reason for attempting to do something is one's own desire which in the management context is referred to as self-motivation. When an individual enjoy doing certain things, thus his own goals are appealing to himself, and he might do it for someone he likes without being asked.

H6a. Pleasure has a positive effect on perception.
H6b. Pleasure has a positive effect on loyalty.

Management concepts in the perception of blood donation must be able to overcome the challenges of public awareness of blood donation. Therefore, consumer perception is considered crucial as it represents personal relevance to an object, event, or activity (Peter & Olson, 2010). Donors, as co-producers and co-participants, are integral parts of the organization and must be considered. Donor perceptions have the potential to influence organizational productivity and performance (Pombo & Gomes, 2019). From a customer perspective, services are essentially a combination of customer experiences and their perceptions of service outcomes (Oven & Johnson, 2017). Perception can be concluded as a process of organizing and interpreting stimuli by observing acquired objects and being able to draw various positive information conclusions. Any positive activity will enhance reliable perceptions, thus requiring strong and tangible steps to build increasingly higher perceptions. From the various definitions above, it can be concluded that donor perception is the process of interpreting or understanding donor information about blood donation activities.

According to Kotler and Keller (2009), consumer perception is the process by which we select, organize, and interpret input information to create an image. Perception has an impact on consumer behavior. The research results from Al-Riyami et al. (2021) conclude that perception influences blood donation activities among students. Sargeant & Lee (2004) research findings indicate that charitable perception will affect charitable activities. The research results explain that consumer perception will influence behavior (Ergönül, 2013; Widyarini & Gunawan, 2018).

H7. Donor perception has a positive effect on loyalty.

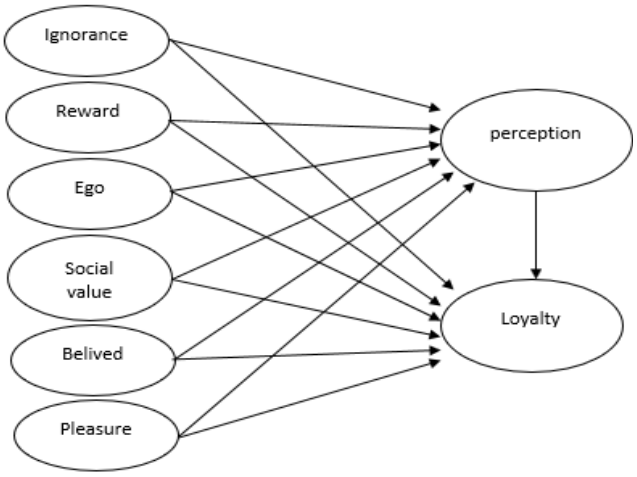

Fig. 1: Conceptual Framework

3. Methodology

This research adopts a quantitative approach with a survey method, employing multivariate statistics that refer to all statistical techniques simultaneously analyzing multiple measurements on the individuals or objects being investigated (Hair, 2010). The population in this study consists of the entire population who have ever donated blood and are registered as repeat donors in the Bakorwil V East Java region. Bakowil V East Java is a disaster-prone area, with 2 of the 8 highest active volcanoes in Indonesia located in Bakorwil V East Java, namely Semeru and Raung, 2 active volcanoes Ijen and Bromo, and a southern sea prone to tsunamis. Bakorwil V East Java covers 6 regencies, namely Jember, Lumajang, Bondowoso, Situbondo, Banyuwangi, Probolinggo Regencies.

The sample was selected using purposive sampling technique, where the sample is chosen based several criteria, namely: (1) Individuals who are active donors and are committed to carried it out routinely during the last 5 years, recorded systematically using the national blood donor system, namely

the SIMDONDAR for Blood Transfusion Unit of Indonesian Red Cross, and (2) donors provide their phone number to the Indonesian Red Cross as a sign of willingness to be called when needed. Donors who have donated blood at least 10 times are eligible to receive a blood donor certificate from PMI for 10 donations and are actively registered as donors for 5 consecutive years in SIMDONDAR. Based on these criteria, a total of 373 samples were randomly selected and obtained from each regencies. According to the suggestion from Hair et al. (2019), the minimum sample size for a study can be determined by looking at the model complexity and the characteristic for basic measurement model. Hair et al. (2019) mentioned that minimum sample size of SEM model, especially complex ones is above 200. Therefore, with 373 sample size, this study has met the criteria for minimum sample.

The data is collected by distributing questionnaire directly to the respondents from October to December 2023. Respondents are asked to fill in their opinion using 5-point Likert scale regarding the influence of self-determination theory on blood donors' loyalty, with the perception as the mediating variable. The questionnaires are developed and modified from the previous study. Ignorance (X1) is measured using three items developed from Williams et al. (2019), namely non-intentional, non-valuing, and lack of competence. The measurement for reward (X2) has three items, while ego (X3) is measured using three items, namely ego involvement, self-approval, and focus on others, both adopted from France (2017). Social value (X4) consists of personal importance, conscious valuing of activity, and self-endorsement of goals, adopted from Ryan & Deci (2017). Belief (X5) is measured using congruence, awareness, and consistency of identification adopted from France (2017). Pleasure (X6) is measured using inherent satisfaction, interest, and enjoyment adopted from Ryan & Deci (2017). Perception as mediating variable is measured using three items adopted from Sargeant & Lee (2004). Finally, loyalty is measured using three items, namely commitment, consistency, and willingness.

As the research instruments, the questionnaires are tested for validity and reliability. Validity tests are conducted using confirmatory factor analysis for each latent variable. Indicators of a variable are considered valid if they have a significant loading factor (alpha=5%). A research instrument is deemed valid and unidimensional if it has a goodness of fit index (GFI) value >0.90. In addition, the threshold value used to assess an acceptable level of reliability is 0.60. For the data analysis and hypothesis testing, structural equation modeling (SEM) AMOS is carried out as it allows for the examination and validation of complex relationships among variables in a theoretical model, facilitating comprehensive statistical analysis and model testing. Finally, sobel test is employed to determine the role of intervening variables in mediating the influence of dependent and independent variables.

4. Results and Discussion

4.1. Respondents' Characteristics

Table 1. Respondents' Characteristics

Respondent Characteristics	Percentage
Gender	
Male	69%
Female	31%
Education	
Junior high school	9%
Senior high school	30%
D3/S1/S2/S3	61%
Age	
17 – 25 years	10%
26 – 34 years	25%
35 – 43 years	26%
44 – 52 years	27%

53 – 60 years	12%
Ethnics	
Java	82%
Madura	13%
Osing	2%
Chinese	2%
Others	2%
Job	
Student	5%
Farmer	4%
Entrepreneurs	21%
Employee	21%
Teacher	14%
Breeder	0%
Fisherman	0%
Others	13%

Based on gender, it shows that males are more dominant, accounting for 69%, while females make up 31%. Female donors face certain health obstacles that are not met during pregnancy, postpartum, or menstruation. In terms of education, 30% have completed high school, and the highest education level is Diploma/Bachelor's/Master's degree (S3) at 62%. It can be concluded that the higher the donor's education, the greater the opportunity to build donor loyalty. Characteristics based on age are lowest in the 17-25 age group at 10%, followed by the age range of 53-60 years at 12%. The highest range is evenly distributed from the age range of 26 to 52, indicating that the productive age group contributes more to blood donation in this study. Characteristics based on ethnicity show that the Javanese ethnicity is the highest, followed by Madurese. Meanwhile, the Osing and Chinese ethnicities have the same percentage, each at 2%, and other ethnicities also contribute to blood donation at 2%. All ethnicities participate in blood donation. In terms of occupation, employees/officials occupy the largest percentage at 44%, followed by entrepreneurs at 21%. Educators also dominate in third place, followed by students and farmers. The emergence of new professions in the current era is reflected in the characteristics based on occupation at 13% in other occupations. The lowest percentage is for occupations such as farmers and fishermen, each accounting for 0% of respondents.

4.2. Validity and Reliability

All items are tested for validity using the AMOS 20.0 program. In the context of validity testing in research or psychometrics, the loading factor refers to the strength of the relationship between an observed variable and its underlying construct in a factor analysis. When the loading factor falls within the range of 0.709 to 0.873, it signifies a strong and significant relationship between the observed variable and the construct it is supposed to measure. A loading factor of 0.709 to 0.873 indicates that the observed variable contributes substantially to the measurement of the underlying construct. The probability values for all indicators of the variable donor loyalty as a co-producer and co-participant are less than 0.05. Thus, it can be concluded that all indicators are significantly related to the construct of donor loyalty as a co-producer and co-participant; in other words, all indicators can be considered valid. In this case, with construct reliability values ranging from 0.829 to 0.942, it suggests that the items in the measurement instrument are highly reliable in measuring the intended construct. A construct reliability value of 0.829 to 0.942 indicates a high level of internal consistency among the items in the scale. The closer the value is to 1, the higher the reliability of the scale. In this range, the measurement instrument is considered to have good to excellent reliability, meaning that the items are consistently measuring the same underlying construct.

Table 2. Validity and Reliability Test Results

Variable and Indicator	P	Loading Factor	S.E	Constuct Reliability	Information
Ignorance				0,829	Reliable
Ig1	0,000	0,814	0,056		Valid
Ig2	0,000	0,709	0,042		Valid
Ig3	0,000	0,781	0,048		Valid
Reward				0,938	Reliable
Re1	0,000	0,814	0,056		Valid
Re2	0,000	0,709	0,042		Valid
Re3	0,000	0,781	0,048		Valid
Ego				0,940	Reliable
Ego1	0,000	0,830	0,056		Valid
Ego2	0,000	0,726	0,043		Valid
Ego3	0,000	0,766	0,048		Valid
Social Value				0,940	Reliable
Sv1	0,000	0,873	0,052		Valid
Sv2	0,000	0,849	0,055		Valid
Sv3	0,000	0,807	0,048		Valid
Believed				0,942	Reliable
Bel1	0,000	0,832	0,055		Valid
Bel2	0,000	0,719	0,043		Valid
Bel3	0,000	0,775	0,048		Valid
Plesure				0,940	Reliable
Ple1	0,000	0,845	0,056		Valid
Ple2	0,000	0,699	0,042		Valid
Ple3	0,000	0,776	0,048		Valid
Perception				0,942	Reliable
Per1	0,000	0,845	0,055		Valid
Per2	0,000	0,822	0,048		Valid
Per3	0,000	0,889	0,053		Valid
Loyalty				0,942	Reliable
Loy1	0,000	0,848	0,055		Valid
Loy2	0,000	0,832	0,048		Valid
Loy3	0,000	0,879	0,053		Valid

Source: Data Processed (2023)

4.3. Testing Structural Equation Modeling (SEM) Assumptions

After conducting validity and reliability tests on each latent variable, assumptions were tested to see if the prerequisites required in SEM modeling were met. The prerequisites that must be fulfilled are multivariate normality assumption, absence of multicollinearity or singularity, and outliers. The normality test or assessment of normality (CR) yielded a CR value of 1.920, which falls between -2.58 ⩽ CR ⩽2.58 ($\alpha = 0.05$), indicating that the data is multivariately normal. Additionally, the univariate data is normally distributed, as evidenced by the critical ratio values for all indicators falling between -2.58⩽ CR ⩽2.58. The test for multicollinearity using Amos 20 software showed a determinant value of the sample covariance matrix of 36.007. This value is significantly above zero, suggesting that there is no multicollinearity or singularity issue in the analyzed data.

Outlier detection was performed using Mahalanobis D-squared. The Mahalanobis distance values, based on the chi-square value at 24 degrees of freedom (number of indicator variables) with a significance level of p<0.01(X2 0.001) is 48.278 (chi-square table df). Thus, data with a Mahalanobis distance greater than 48.278 are considered multivariate outliers. Based on the data processing results, it is evident that the values of p1 and p2 are smaller than 48.278, leading to the conclusion that there

are no multivariate outliers, or in other words, there is no significant difference between the data and the data group.

4.4. Structural Equation Modeling (SEM) Analysis

The research results provide the structural model of latent variables, as shown in Figure 1, which illustrates the influence of ignorance, reward, ego, social value, believed, and pleasure on the Perception of Donors as Co-Producers and Co-Participants and the Loyalty of Donors as Co-Producers and Co-Participants among donors in Jember. The first test, Chi Square, does not meet the Good Fit standard, as it is larger than X2 on df = 373, which is 394.626, and the AGFI has a less satisfactory value of 0.895, below 0.90.

The estimation results of the structural model in this study obtained several possible modifications to the model, which can provide model fit indices closer to the recommended limits. After model improvement, there are eight model fit criteria as seen in Figure 2.

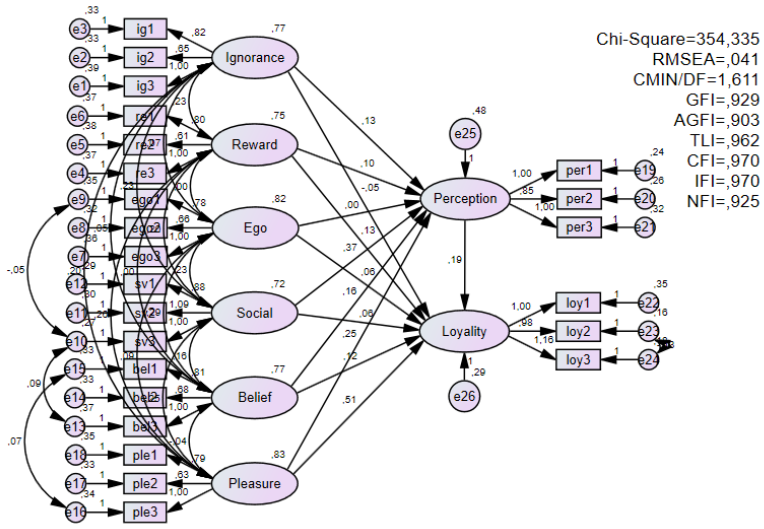

Fig. 2: Analysis Results of SEM-AMOS

Table 2. Results of Causality Testing

			Path Coefficient	Effect Size	C.R.	P-value	Conclusion
Perception	<	Ignorance	,130	,058	2,250	,024	Significant
Perception	<	Reward	,100	,061	1,651	,099	Not Significant
Perception	<	Ego	,001	,058	,010	,992	Not Significant
Perception	<	Social	,374	,064	5,856	***	Significant
Perception	<	Belief	,164	,058	2,819	,005	Significant
Perception	<	Pleasure	,252	,058	4,354	***	Significant
Loyality	<	Ignorance	-,049	,045	-1,099	,272	Not Significant
Loyality	<	Reward	,131	,047	2,752	,006	Significant
Loyality	<	Ego	,055	,044	1,246	,213	Not Significant
Loyality	<	Social	,064	,052	1,244	,213	Not Significant
Loyality	<	Belief	,119	,046	2,578	,010	Significant
Loyality	<	Pleasure	,508	,056	9,086	***	Significant
Loyality	<	Perception	,187	,052	3,602	***	Significant

Based on Table 2, further interpretation of each path coefficient with a recommended critical ratio threshold of 1.96 is as follows: H1a: Accepted, with a path coefficient of 0.130 and a critical ratio of

2.250, exceeding the recommended threshold. H1b: Rejected, with a path coefficient of -0.049 and a critical ratio of -1.099, falling below the recommended threshold. H2a: Rejected, with a path coefficient of 0.100 and a critical ratio of 1.651, below the recommended threshold. H2b: Accepted, with a path coefficient of 0.131 and a critical ratio of 2.752, exceeding the recommended threshold. H3a: Rejected, with a path coefficient of 0.001 and a critical ratio of 1.651, below the recommended threshold. H3b: Rejected, with a path coefficient of 0.055 and a critical ratio of 1.246, below the recommended threshold. H4a: Accepted, with a path coefficient of 0.347 and a critical ratio of 5.856, exceeding the recommended threshold. H4b: Rejected, with a path coefficient of 0.064 and a critical ratio of 1.244, below the recommended threshold. H5a: Accepted, with a path coefficient of 0.164 and a critical ratio of 2.819, exceeding the recommended threshold. H5b: Accepted, with a path coefficient of 0.119 and a critical ratio of 2.579, exceeding the recommended threshold. H6a: Accepted, with a path coefficient of 0.252 and a critical ratio of 4.354, exceeding the recommended threshold. H6b: Accepted, with a path coefficient of 0.508 and a critical ratio of 9.086, exceeding the recommended threshold. H7: Accepted, with a path coefficient of 0.187 and a critical ratio of 3.602, exceeding the recommended threshold.

Table 3. Results of Sobel Test

Endogenous Variables		Intervening		Exogenous Variable	Loading Factor	P Value	Information
Loyality	<	Perception	<	Ignorance	1,902	0,057	Not Significant
Loyality	<	Perception	<	Reward	1,491	0,067	Not Significant
Loyality	<	Perception	<	Ego	0,017	0,493	Not Significant
Loyality	<	Perception	<	Social	3,062	0,002	Significant
Loyality	<	Perception	<	Believed	2,222	0,026	Significant
Loyality	<	Perception	<	Pleasure	2,770	0,005	Significant

The research results indicate that Perception has not been able to mediate the influence of ignorance on Loyalty. Based on the Sobel test results, the Loading Factor is 1.902, and the P-value is 0.057. Perception has not been able to mediate the influence of Reward on Loyalty. According to the Sobel test results, the Loading Factor is 1.491, and the P-value is 0.067. Perception has not been able to mediate the influence of Ego on Loyalty. The Sobel test results show that the Loading Factor is 0.017, and the p-value is 0.493. All these values are rejected because they are less than 1.96 with a significance level of 0.05.

Perception mediates the influence of Social Value on Loyalty. Based on the Sobel test results, the Loading Factor is 3.062, and the p-value is 0.002. Perception mediates the influence of Believed on Loyalty. According to the Sobel test results, the Loading Factor is 2.222, and the p-value is 0.026. Perception mediates the influence of Pleasure on Loyalty. Based on the Sobel test results, the Loading Factor is 2.770, and the P-value is 0.005. These values are accepted because they have a loading factor greater than 1.96 with a significance level of 0.05.

4.5. Discussion

In exploring the dynamics of blood donor loyalty in Indonesia, this study adopts a theoretical lens grounded in the self-determination theory (SDT). SDT offers a robust framework for understanding the motivational underpinnings of individuals' behaviors, and in the context of blood donation, it provides a nuanced perspective of the factors influencing donor loyalty. The dimensions of SDT, are examined alongside specific constructs such as ignorance, reward, ego, social value, belief, and pleasure. This discussion delves into the empirical insight uncovered by the data analysis that has been carried out, shedding light on how these motivational and perceptual factors intricately contribute to blood donor loyalty.

The path coefficient testing results indicate that ignorance significantly influences the donor's

perception. This finding explains that without intention (non-intentional), lack of understanding (non-valuing), and lack of knowledge (lack of competence) towards blood donation, it will be difficult to build perception and loyalty. It will be challenging to have donor commitment, meaning not only donating regularly but also coming at any time when needed and always maintaining health to preserve the quality of blood because blood is a medicine. By reducing the three indicators of indifference/ignorance, it is proven to be able to be used to build perception and loyalty. By increasing the donor's intention, improving understanding, and enhancing knowledge of blood donation, it can enhance perception and loyalty.

This finding is relevant to the research results from Vincent et al. (2019; Mohammed & Essel, 2018). The path coefficient testing results indicate that ignorance does not significantly influence loyalty. This means that the existence of ignorance activities carried out by Indonesian Red Cross does not directly affect encouraging loyalty. This result shows that although ignorance significantly affects perception, it does not affect loyalty. This research result supports studies that have shown a non-significant relationship with behavior, such as Azizah (2023; Zycinska & Januszek, 2021), and is inconsistent with the research results of Rosli & Saleh (2022; Phillips & Guarnaccia, 2020; Williams et al., 2019; Gilal et al., 2019; Manger et al., 2020; France, 2014) which suggest that individuals without motivation have a negative relationship with blood donation.

The path coefficient testing results indicate that rewards do not influence perception. Rewards or incentives in blood donation activities are given by providing food and drinks as a health substitute, gifts, or expressions of gratitude, sometimes in the form of umbrellas, campaign-themed blood donation T-shirts, or items like towels, glasses, and others. People appreciate these gifts. However, these rewards do not make individuals have perceptions about the benefits of blood donation. Rewards cannot build perceptions of organizational professionalism, the usefulness of blood donation, and have not been able to build perceptions of charity from blood donation activities. In other words, the reward activities that have been carried out by the Indonesian Red Cross so far do not directly affect improving donor perceptions. Rewards, as extra benefits, cannot directly enhance perceptions. This finding aligns with previous research, including studies by Van den Broeck et al. (2016; Ntoumanis et al., 2021; Azizah, 2023; Azizah, 2022; Maulana et al., 2016) which explain that external regulation measured through rewards does not influence individual behavior. External influences often do not become reasons for behavior (Gilal et al., 2020). However, this result contradicts the findings from AlJubari (2019; Widyarini & Gunawan, 2018; Braga de Oliveira Friaes et al., 2023; M'Sallem, 2022) which found a significant impact of external regulation on perception. The study from Vincent et al. (2019) suggests that motivation is not influenced by perceptions of donation barriers. Therefore, it can be concluded that someone who receives gifts or sanctions does not have an influence on perception.

On the contrary, the path coefficient testing results indicate that rewards influence loyalty. This means that the reward activities carried out by PMI directly impact the increase in donor loyalty. The research findings align with the results from Rahi & Ghani (2019; Widyarini & Gunawan, 2018; Gilal et al., 2019; Manger et al., 2020; Rosli & Saleh, 2022) which provide research results that external regulation significantly influences behavior. It is also consistent with previous research by Williams et al. (2019) and France (2014) explaining that externally motivated regulation with rewards has a reliable and valid impact.

The path coefficient testing results indicate that ego does not significantly influence both perception and loyalty. This result rejects the third hypothesis stating that a higher level of ego does not affect perception. This finding contradicts the research results of AlJubari (2019; Widyarini & Gunawan, 2018; M'Sallem, 2022; Braga de Oliveira Friaes et al., 2023) which found a significant influence of motivation on perception. It also rejects the hypothesis stating that a higher level of ego will increase loyalty, opposing the research results of Gilal et al. (2019) and Manger et al. (2020) which found that external regulation significantly influences behavior. Furthermore, Azizah (2022; Rahi & Abd. Ghani, 2019; Rosli & Saleh, 2022), found that introjected regulation influences consumer behavioral intentions.

France et al. (2014) concluded that introjected regulation influences blood donation. Williams et al. (2019) concluded that introjected regulation is related to blood donation. France has also researched and found results indicating avoiding guilt or boosting an individual's ego (France, 2017).

The path coefficient testing results indicate that social value significantly influences p;erception. Donors who place importance on social values feel that blood donation is noble, and engaging in blood donation is crucial for helping others' health, which can build perceptions about blood donation. Religious values that support social values because blood donation aligns with religious teachings to do good to others can shape perceptions. This finding supports the research results of AlJubari (2019; Braga de Oliveira Friaes et al., 2023; Widyarini & Gunawan, 2018; M'Sallem, 2022) which found a significant influence of motivation on perception.

Contrarily, social value does not significantly influence loyalty. The values present in society, especially those related to blood donation, cannot have an impact on building loyalty. Social values cannot influence the commitment to blood donation that needs to be established, such as committing to regularly donate blood, maintaining good health to ensure donated blood is beneficial to those in need, and being committed to donating blood whenever it is needed. The findings of this study reject research results that explain the identified regulation, which has an impact on intention and behavior, as seen in the studies by Van den Broeck et al. (2021; Widyarini & Gunawan, 2018; Gilal et al., 2019; Rosli & Saleh, 2022; Rahi & Abd. Ghani, 2019). Meanwhile, Manger et al. (2020; Azizah, 2023; Maulana et al., 2016) found that identified regulation significantly influences behavior. In theory, Heider (1958:126) explains that behavior is motivated because individuals do it because they think they should do it, as they feel obligated to do so.

The variable belief significantly influences perception. The higher the level of belief, the more it increases perception. Conversely, if the level of belief is low, it will decrease perception. Belief becomes an important goal for one's entire life, meaning blood donation behavior is seen as important and is part of the system of needs in behavior, values, and a larger identity. The findings of this study support the results obtained by AlJubari (2019; Widyarini & Gunawan, 2018; M'Sallem, 2022; Braga de Oliveira Friaes et al., 2023) which found a significant effect of motivation on perception. The research by Vincent et al. (2019) explains that good motivation does not affect the perception of barriers to donation. Thus, it can be concluded that someone who has belief has an influence on perception. Consistent with this study, Mohammed & Essel (2018) explains that motivation will influence perception or enhance perception. The impact of motivation on perception is also confirmed by D'Aquila et al. (2019).

The variable belief significantly influences donor loyalty. The higher the level of belief, the more it increases loyalty. Conversely, if the level of belief is low, it can decrease loyalty. This finding is consistent with research results that explain integrated regulation, which assimilates new things with values and one's needs, can influence behavior (Engström & Elg, 2015; Widyarini & Gunawan, 2018; Rosli & Saleh, 2022; Rahi & Abd. Ghani, 2019; Azizah, 2023). Another study has indicated that integrated regulation, as one of life's goals, influences donor behavior. An example is individuals donating because it aligns with their life goal of helping others (France, 2017). It has also been explained that integrated regulation is a life goal resulting from values that influence behavior (Zycinska & Januszek, 2021).

The pleasure variable significantly influences the perception and donor loyalty. This means that if the pleasure level is higher, it can increase both perception and loyalty. Conversely, if the pleasure level is low, it will decrease both perception and loyalty. These results support the hypothesis that higher pleasure in blood donation increases both perception and loyalty. This finding aligns with the study from AlJubari (2019; Widyarini & Gunawan, 2018; M'Sallem, 2022) which found a significant effect of motivation on perception. The impact of motivation on perception is also supported by D'Aquila et al. (2019). This study supports previous studies from Williams et al., 2019; Gilal et al., 2019; Azizah, 2022; Widyarini & Gunawan, 2018; Rosli & Saleh, 2022), explaining that intrinsic motivation characterized by joy and happiness influences the intention to donate. Furthermore, Rahi & Abd. Ghani (2019; Maulana et al., 2016) explain the influence of intrinsic regulation on the intention to purchase behavior. Previous research has shown that intrinsic motivation has a positive effect on loyalty. This is

consistent with the previous findings (France, 2014; 2017; Azizah, 2023) which explain that intrinsic motivation provides a reliable and valid influence.

The path coefficient test results indicate that perception significantly influences loyalty. This result shows that the hypothesis stating that higher perception increases loyalty is accepted or proven. Based on the description of respondents' answers, the majority of respondents tended to agree or strongly agree regarding the perception conducted by the Indonesian Red Cross. In theory, Kotler and Keller (2009) explain that consumer perception is the process by which we select, organize, and interpret input information to create a mental picture. From this theory, it aligns with the findings of this study, namely that perception creates a mental picture. Therefore, the mental picture regarding benefits, charitable perceptions, and the professionalism of blood organizers can build loyalty. This research result is also supported by the findings of AlRiyami et al. (2021), which conclude that perception influences blood donation activities among students. Another study has yielded the result that charitable perceptions will influence charitable activities (Sargeant & Lee, 2004). The research findings explain that consumer perception will influence behavior (Ergönül, 2013; Widyarini & Gunawan, 2018).

5. Conclusion

This study is conducted with the objective of comprehending the loyalty of blood donors in Indonesia through the lens of self-determination theory (SDT). SDT provides a comprehensive framework for examining motivational factors that influence individuals' behaviors, including the context of blood donation. By employing survey data from 373 repeat donors in East Java, Indonesia, this empirical analysis generates a robust model integrating key SDT dimensions with perceptual factors to explain blood donor loyalty in Indonesia. Findings reveal perceived pleasure and belief in donation as most integral for retention, while extrinsic rewards demonstrate negligible impact. Enhancing internal motivations and positive imagery regarding the meaningfulness of contributions can heighten donor dedication over time.

Practically, this study holds implications for healthcare practitioners and policymakers seeking to bolster blood donor loyalty. Strategies aimed at fostering a sense of pleasure and reinforcing the belief in the meaningful impact of donations can be instrumental in enhancing the commitment of blood donors. Moreover, the identification of the limited influence of extrinsic rewards suggests the need for a more nuanced approach to incentives in blood donation campaigns. Theoretical implications of the present study lie in the enriched understanding of SDT within the specific domain of blood donation. These findings contribute to the evolving literature on motivational factors influencing pro-social behaviors, providing a nuanced application of SDT in the context of blood donor loyalty. The model generated through our study can serve as a foundation for future research endeavors, offering a template for exploring donor loyalty dynamics in diverse cultural and geographical settings.

However, it is crucial to acknowledge certain limitations. This study focused exclusively on donors in Region V of East Java, limiting the generalizability of the findings. Future studies should expand the scope to encompass diverse regions and cultural contexts for a more comprehensive understanding of blood donor loyalty. Additionally, while the study provides valuable insights into the motivational aspects of donor loyalty, other contextual and socio-economic factors may warrant exploration in future research. Furthermore, the cross-sectional nature of our study design restricts our ability to establish causation, prompting the need for longitudinal investigations to unravel the dynamics of blood donor loyalty over time.

In terms of future research, the avenues for exploration are plentiful. Researchers could delve deeper into the cultural nuances influencing blood donor loyalty by conducting comparative studies across different regions. Longitudinal studies could provide a more nuanced understanding of the trajectory of donor loyalty, while qualitative inquiries may offer insights into the subjective experiences of donors. Additionally, investigating the impact of emerging technologies and social media on donor motivation and engagement presents an intriguing avenue for future exploration. By addressing these avenues, the

field can continue to evolve and contribute to the ongoing efforts to sustain and enhance blood donation practices.

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