



## DEFINING INVESTMENT DECISION MAKING IN THE STOCK MARKET: A LITERATURE REVIEW

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### ABSTRACT

*Investment Decision Making (IDM) is closely related to the important role of stocks in the national economy. Investment decision-making becomes a research topic that is studied by researchers with various research designs. However, through initial observations, it was found many theoretical frameworks define investment decision-making. This article aims to define stock investment decision making including theoretical frameworks and their paired variables. A Systematic Literature Review (SLR) with data analysis using excel and NVivo 12 was employed as the research method. Accordingly, the results show that various definitions of IDM were used by researchers and most of which define it as IDM rational activity with varied underlying theories that were mostly based on the bounded rationality theory and determined by their paired variables.*

### KEYWORDS

Investment decision making; stock markets; national economy

## 1. INTRODUCTION

The stock market has proven to play an important role in the national economy to date. This can be seen from how stock market developments in central and eastern European countries affect their economic growth (Carp, 2012). Arestis et al. (2001) divide the roles into capital liquidity and price volatility. For instance, how the stock market intervenes in the relationship between the COVID-19 pandemic and the volatility of world crude oil prices (Sui et al., 2021). The role of the stock market above cannot be separated from investment decisions by investors. Investment decisions continue to be a topic of research around the world with various backgrounds and research designs using various variables. This is because there are many factors that affect investment activities that have limited reviews and many emphases or points of view on these. In general, this division is based on two groups, namely those related to macroeconomic factors (Ho & Njindan Iyke, 2017) and microeconomics (Benson et al., 2019). Bakar and Yi (2016), Hamzaçebi and Pekkaya (2011) as well as Lin (2011) define investment decision-making as a rational decision-making process, while Masomi (2011), as well as Kumar and Goyal (2015), did not relate them to the decision-making process. Yet, Masini and Menichetti (2012) define investment decision-making as related to the amount of funds invested and not used on other variables (Anbalagan & Maheswari, 2015) because it is a risky decision (Cesarini et al., 2010). This makes the study of investment decisions more interesting and can be widely developed by researchers. However, researchers must be careful in defining the related variables in the study.

Research on quantitative and qualitative decision-making requires reference theory. In social studies, scientific theory has three main roles, namely to assist in codifying existing knowledge and providing general hypotheses; to guide research by defining the boundaries of knowledge; and to facilitate in controlling observational and interpretive bias (Tolman et al., 1962). This idea is in line with events VanderStoep and Johnston (2009) mention the need for theory to describe and predict an event that is commonly found in quantitative research. Collins and Stockton (2018) outline three roles of theory in qualitative research, namely: 1) paradigm theory and research methods, 2) theory development as a result of data collection, and 3) theory as a framework to guide studies. However, no reference has yet been found to explain the type of theory of decision-making comprehensively. The study of theoretical foundations has an important meaning for researchers in building relationships between variables that may be very diverse and can be paired with Investment Decision Making (which is addressed as IDM in the following discussion). IDM variables, but previous studies have only used one or several theories as the basis of their research so that it tends to allow gaps to emerge in the research. There are three questions brought up in this study, namely on the varied definitions of IDM, theories used in IDM research/study, and the variables' tendencies paired with IDM variables. These questions forego highlight the importance of this study in solving the gaps laid by the prior research and studies related to IDM.

## 2. LITERATURE REVIEW

### *Investment decision making*

This phrase is explained in two terms, namely decision making and investment. First, the decision making, this term needs to be distinguished from the term decision. Decisions are choices or attitudes that must be made and made after going through the process of thinking about several possibilities ([Cambridge English Dictionary, n.d.](#)). This term can not only be understood as a thing (noun) but also as an action (verb) that denotes a job ([Wang, 2015](#)). Schoemaker and Russo ([2014](#)) state that decision-making is a process of individuals, groups, or organizations reaching conclusions about actions to be taken with a set of goals and limited resources. Meanwhile, Wang ([2015](#)) states that decision-making means an action to choose the best way to achieve goals with limited resource allocation (both tangible and intangible resources). The second is an investment. According to the dictionary, the word investment is defined as the allocation of financial resources in the form of real assets and financial assets to expect a reasonable return ([Banks, 2010](#)). Similarly, this definition has been put forward by Laopodis ([2021](#)) who defines investment as today's sacrifice of resources (time, money, and energy) with the purpose of getting better or more resources in the future. Thus, making an investment decision means choosing the best way to achieve the goal of obtaining future returns with limited financial resources.

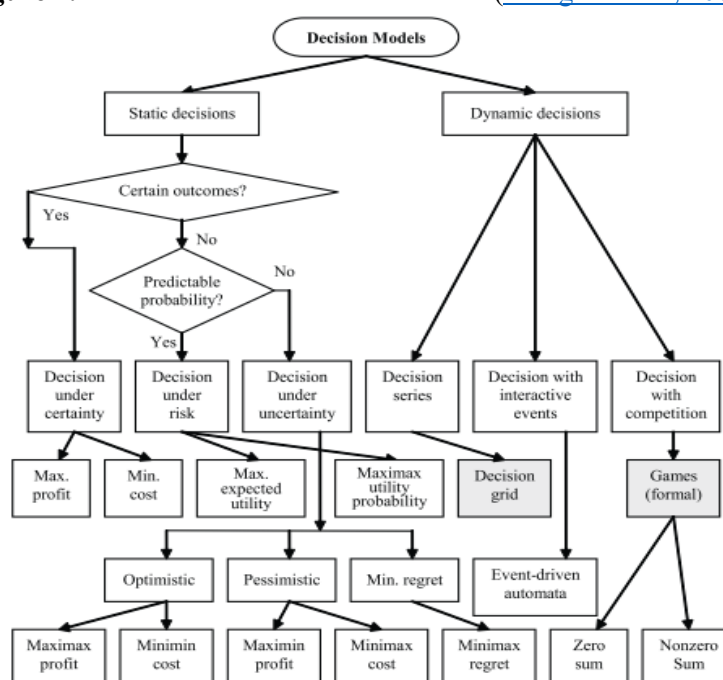
The process is important in terms of decision-making. Table 1 shows three versions that describe the decision-making process. According to Schoemaker and Russo ([2014](#)) as well as Rowe and Boulgarides ([1983](#)), in making a simple decision, there are three stages that need to be done, namely: 1) stimulation and perception, 2) cognition, and 3) action and response. Furthermore, Lim and Lakhmi ([2010](#)) divide the process into four phases, namely: the intelligence phase, the design phase, the choice phase, and the implementation phase. Meanwhile, Hadnagy and Fincher ([2015](#)) mention the that process in a decision-making model consists of problem determination, information gathering, choice consideration, decision-making, and evaluation. All the stages of decision-making show a connection between cognition and human psychology. Redish (2013) agrees that the brain is an important engine in decision-making, yet the possibility of the emergence of irrational decisions cannot be ignored or forgotten because it highly relates to individual subjectivity. Factors that influence a person's decision-making include personal needs, task demands and obligations, organizational interactions, and environmental pressures so that they too have their own decision-making styles such as heuristic, analytical, contingency, or normative styles ([Rowe & Boulgarides, 1983](#))([Jamian et al., 2013](#))([Ogarca, 2015](#)). Meanwhile, decision-making styles in the organizational context include directive, analytic, conceptual, and behavioural ([Rowe & Boulgarides, 1983](#)).

**Table 1.** Comparison of the Stages of the Decision-Making Process

<a href="#">(Rowe &amp; Boulgarides, 1983)</a>	<a href="#">(Lim &amp; Lakhmi, 2010)</a>	<a href="#">(Hadnagy &amp; Fincher, 2015)</a>
1. The first phase (stimuli and perception)	1. intelligence phase	1) The problem,
2. The second phase (cognition)	2. design phase	2) Gather information,
	3. choice phase	3) Consider options,
3. The third phase (action and response)	4. implementation phase	4) Make decision,
		5) evaluate

The diverse conditions of the influencing factors, including cognitive ability, psychological conditions, as well as decision-making styles allow differences in the quality of the end decisions. The resulting decisions can be divided into levels: intuitive, empirical, heuristic, and rational decisions ([Wang & Ruhe, 2007](#)). Rational decisions are further grouped into static and dynamic decisions which can be seen in Figure 1. The end decision model can be in the form of rational decisions (prioritizing maximizing outcomes), organizational (prioritizing satisfaction), political (acceptable outcomes), or process (objectives-oriented outcomes) ([Harrison, 1993](#)) ([Garcia-Perez et al., 2019](#)). Considering the above explanation, the meaning of decision-making is as a verb that shows a characteristic of a qualified decision, namely commitment to action with the characteristics such as having an appropriate frame; being creative (having more alternatives); being meaningful, having reliable information, clear values, and trade-offs; as well as having logically correct reasoning ([Lim & Lakhmi, 2010](#)). Good decision-making requires the drivers in environmental factors, organizations' strategy, ethics, empowerment, information and feedback, programs, options, risk avoidance, resources, and opportunities to produce good decisions ([Negulescu & Doval, 2014](#)).

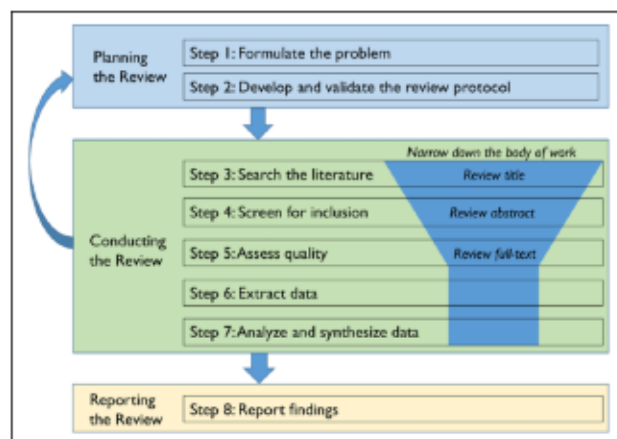
**Figure 1.** A framework of rational decisions ([Wang & Ruhe, 2007](#)).



### 3. METHODS

SLR is the method selected for this study because it provides new insights, perspectives, and understanding of the broad definition of investment decisions (Boell & Cecez-Kecmanovic, 2015) which steps are described in Figure 2. In addition, there are a number of protocols from Nightingale (2009) applied prior to this study to avoid bias, including determining the purpose and objective of the review in finding various definitions of stock investment decision-making. Limiting the articles as sources of the data (published in 2018 - 2020); these articles should contain the keywords or key phrases such as investment, investment decision making, investment decision, intention to invest, financial behaviour, financial investment (note: based on a study of the definition of investment decisions). The articles used as sources should employ a quantitative approach and include stock investment decisions as a variable observed. Another limitation is by limiting the publishers, all articles used were published by Emerald due to the easiness provided by the source (articles often include a method of measuring variables and attach instruments to help researchers identify the operational definition of the object of this research). Meanwhile, Figure 2 shows how the data were categorized by using the technique adapted from Xiao and Watson (2019) and analysed them using Microsoft excel and NVivo.

**Figure 2.** SLR Stages (Xiao & Watson, 2019)



Both the first and second steps of Xiao & Watson (2019) have similar stages as in Nightingale (2009), yet the third to eighth step shows how the research was presented. Accordingly, the method used in this study can be described as follow:

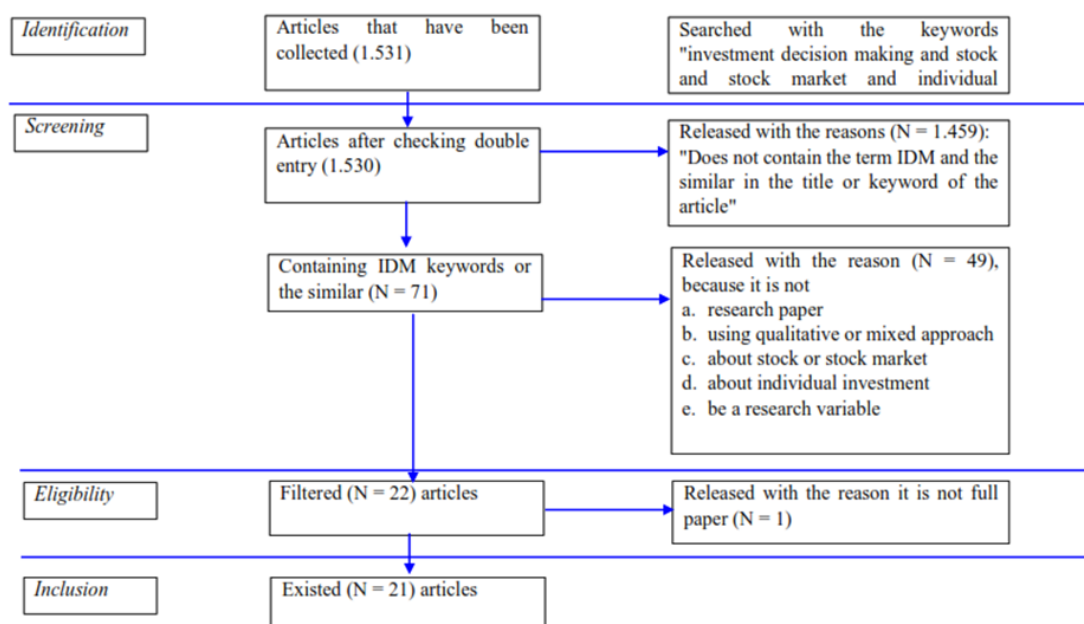
- 1) *Data seeking* (on the Emerald website). At this stage, the xx most relevant research titles were obtained.
  - a. *Channels for literature search. Data based on the publisher – Emerald*
  - b. *Keywords used for the search: “investment decision making and stock and the stock market and individual investors”*

- c. *Sampling strategy: accidental sampling*, which is taking research articles in 2018-2020 with those found and accessible.
  - d. *Sampling is limited to management and finance articles*
  - e. *Stopping rule*. The search stops when it has obtained the first 500 most relevant titles in each year of publication
- 2) *Screen for Inclusion*. The early stage is carried out with the following criteria: having investment decision keywords or other words/phrases that have the same meaning. The procedure is carried out by re-examining the keywords and research titles containing the word "investment decisions" and other similar words, examining the object of research, namely fund shares or the stock market, and re-examining the research area, namely accounting and finance.
- 3) *Assess Quality* is done by examining the completeness of the substance of the article. For example, no table is missing
- 4) *Extracting Data*. Extracting and encoding data using Nvivo software
- 5) *Analysing and Synthesizing*. The data was conducted qualitatively descriptively with metacognitive analysis or connecting the three research questions in one frame of research results.

#### 4. RESULT AND DISCUSSION

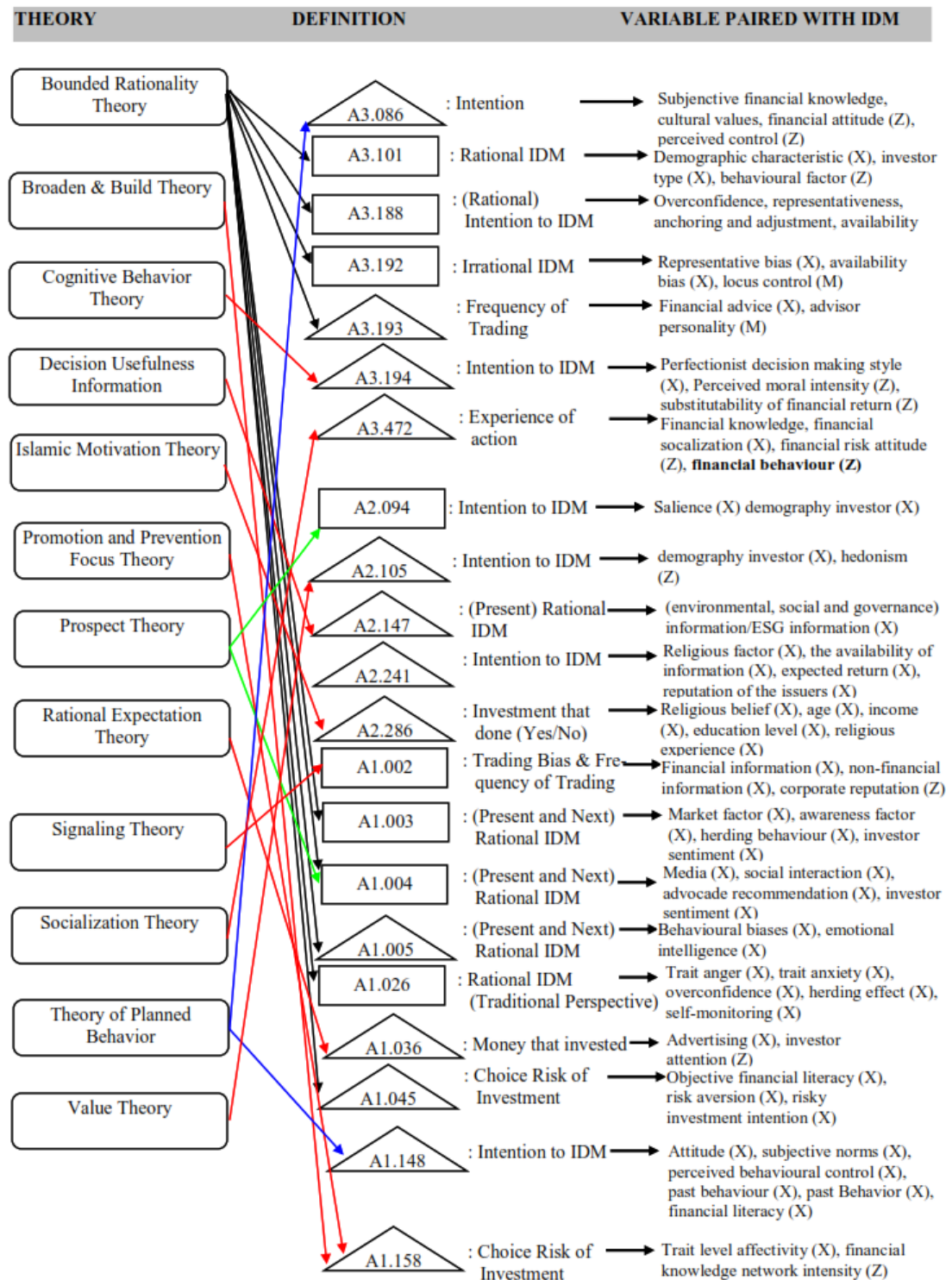
From the stages carried out (which can be seen in Figure 3), the data were found by searching the articles in the Emerald open-access journal. By conducting double entry there were 1530 articles found by administering the limitation, consisting of 544 articles published in 2018, 506 articles published in 2019, and 480 articles in 2020.

**Figure 3. Stages of SLR Investment Decision Making**



From the data obtained, a series of existing stages resulted in findings. Figure 4 shows the relationship between the investment decision making definition and its basic theory and variables. From these results, it can be visualized that the SLR results as a whole explain the relationship between the definition/meaning of IDM with the theoretical basis used and the variables studied which are considered to be able to provide answers to the questions posed in this study.

**Figure 4.** Relationship of Investment Decision Making Definition and Its Basic Theory and Variables



Regarding the definition of decision-making, this study identifies that there are 2 forms of IDM, namely in situations of uncertainty marked by an inner triangle shape under a risky situation and uncertainty with a rectangular shape, the details are as follows:

- 1) A3.101; A3.188; A3.192; A3.194; A2.094; A1.002; A1.003; A3.004; and A1,026 describes IDM under situations of uncertainty and risk.
- 2) A3.086; A3.193; A3.472; A2.105; A2.147; A2.241; A2.286; A1.005; A1,036; A1.45; A1.148; and A1.158 describes IDM under risk situations only.

This finding confirms that most researchers agree that IDM in stocks is a matter of risk and uncertainty ([Wang & Ruhe, 2007](#)) including static decision-making. Meanwhile, Takemura ([2014](#)) states that a decision under risk refers to a condition that occurs with a known probability as a result of selecting an alternative whereas a decision under uncertainty refers to a state in which the probability of an alternative selection outcome is unknown which can be analogically by the decision in carrying an umbrella and the probability of rainfall. When one presumably knows the high probability of rain falling, bringing an umbrella shows a high alternative value. However, it becomes a risk when the rain does not fall. The IDM definition also appears to be closely related to the theory used. The articles based on bounded rationality theory mostly define IDM as a rational behaviour that has been or will be carried out by respondents. However, some articles define IDM as irrational behaviour (A3.192), trading frequency (A3.193), and risk-choosing behaviour (A1.045). Furthermore, articles based on other theories define IDM as an intent to IDM and this is different from the definition of behaviour ([Sheeran, 2005](#)) ([Balau, 2018](#)) ([Schunk & DiBenedetto, 2020](#)). Other definitions of IDM include investment experience (A3.473 and A2.286), and the amount of money that has been invested (A1.036). Moreover, although the articles A3.101; A3.188; A3.192; A1.003; A1.004; A1.005; and A1,045 have similar definitions to A1.026 (based on bounded rationality theory), A1,026 defines IDM according to the traditional perspective (rational theory). Here, the definition of IDM is referred to as decision-making that maximizes satisfaction or achieves the goal of the decision-maker maximally. According to Turpin and Marais ([2004](#)), rational theory and bounded rational theory have different assumptions. Rational theory assumes in possessing the complete information on all alternative solutions and aims to maximize existing utility, while bounded rationality theory assumes on the lack of owning complete information and optimal alternatives.

In the meantime, A3.192 defines IDM in an irrational way, while the article (which is based on bounded rationality theory) tends to define IDM rationally. This difference leads to a difference in forming the hypothesis on A3.192 and A3.188. A3.192 was hypothetically understood as bias representativeness having a significant positive effect on IDM, while A3.188 was the opposite (it has a significant negative effect on IDM). This finding proves that the definition of IDM selected by the researchers should be considered in order to formulate the correct hypothesis. Twelve theories are found in the data related to stock investment decision-making done by individual investors. Hence, bounded rationality theory is the most widely used theory as a basis for research



during 2018-2020. Of the 22 articles studied, nine articles employed this theory to discuss investment decision-making (namely: A1,045; A1,026; A1.005; A1.004; A1.003; A3.193; A3.192; A3.188; and A3.086). Aside from the bounded rationality theory, there are other theories employed in understanding the process of decision-making, those are the Theory of Planned Behavior (namely A1.148 and A3.086) and Prospect Theory (namely A1.004 and A3.194). In addition, although few articles employ a theory in defining their research, others, mostly employ more than one (theory) to determine their hypotheses, such as in A1.004 which combines bounded rationality theory and prospect theory and A3.194 which combines broaden and built theory and promotion and prevention-focus theory.

The Bounded rationality theory in the articles studied is mostly disclosed as behavioural finance theory. However, it is known as bounded rationality by Nigam et al. (2018). Of the nine articles found, only two articles (A3.1101 and A3.188) are based on bounded rationality theory and mentioned this term explicitly. The essence of the bounded rationality theory is that a person is not a perfectly rational being because there are limits to ability (Hidayat, 2016). Decision makers in this theory cannot make rational decisions because of limited information, cognitive thoughts, time constraints (Ahmad & Shah, 2020) and conditions of uncertainty (Kalantari, 2010). This theory is known as the flexibly-bounded rationality theory. Yet, this study found that no research uses flexibly-bounded rationality theory as its theoretical basis for IDM research in the stock market throughout 2018-2020. Marwala (2014) explained that flexibly-bounded rationality theory relates to the possibility of replacing the ability of the human brain in using information processing with the artificial intelligence machine which makes the rational boundaries in decision-making becoming flexible.

The diverse variables are usually paired with IDM; this finding relates to how the variables are used in IDM. When one employs bounded rationality theory, s/he use financial variables, biased behaviour, and personality (respondents' internal factors). However, when the Theory of Planned Behavior was employed in the study, the variables used mostly related to the individual and social factors of the respondents. In using prospect theory, the variables studied are also similar to bounded rationality theory because prospect theory is included in the behavioural model of rational choice (Chaudary, 2019) and is often called as loss-aversion theory (McDermott, n.d.). Framing effect loss aversion is a form of investor bias behaviour related to prospect theory (Baker & Puttonen, 2017). Furthermore, this study found that the technological variable has never been studied together with the IDM variable, yet it actually has the most appropriate theoretical basis in the flexibly-bounded rationality theory. The features of investment robots (Kumbure et al., 2022) have been widely used by investors, including developing countries. Sharma and Kumar (2019) stated that the current research trend is still about behavioural finance. Therefore, IDM research within the framework of flexibly-bounded rationality has its own novelty for the development of behavioural finance research.

## 5. CONCLUSION

The description of the results and discussion confirms the various definitions of IDM and the theoretical basis used in various stock market research. This implies the necessity of selecting the operational definition, determining the appropriate theoretical basis, and formulating the correct hypothesis in the research especially related to investment decision making (IDM). Future studies should take the aspect of technology usage in behavioural finance studies because there has been the development of the latest rational theory, namely flexibly-bounded rationality theory which combines the usage of technology in IDM.

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