NVEO
Natural Volatiles &
Essential Oils

Investment Decisions In Renewable Energy: A Systematic Review

Dansi Ram Bhandari[1] , Chayanoot Sangwichien[2] , Kuaanan Techato[3] , Saroj Gyawali[4]

1. Department of Environmental Management, Prince of Songkla University, Hat Yai, Thailand;
2. Department of Chemical Engineering, Faculty of Engineering, Prince of Songkla University, Hat Yai, Thailand;
3. Faculty of Environmental Management, Dean, Prince of Songkla University, Hat Yai, Thailand;
4. Sustainable Study and Research Institute, Kathmandu- 16, Nepal;

Abstract

Purpose – The aim of this paper is to explore the determinants associated with individual investment decision in renewable energy after systematically review the literature published in past 19 years. This paper includes the major gaps in the previous studies on investment decisions. It tries to explore particular questions for further research.

Methodology – Systematic literature review method is applied in this study. This paper is reviewed by studying the year of publication, types of database, types of statistical techniques, citation analysis and types of research. The study is based on 61 selected articles published in peer review journals from 2003 to 2021.

Findings – Much of the existing literatures available on factors influencing investment decisions are demographic factors. Previous literatures result showed that government policies and advocate recommendations significantly influenced individual investment decisions making process but few studies are available on this topic. Empirical findings results show that risks and accounting information of the firm also reasonably effect on investment decisions

Research implications – This study focuses on factors influencing investment decisions in renewable energy sector. The main objective is to identify what factors play key role while making investment decisions by individual investors. This paper will be helpful to researchers, academicians and those working in the area of investment decisions.

Keywords: Investment Decisions, Individual Investors, Renewable Energy, Systematic Review

1. Introduction

Investment decision is becoming a challenging job in this dynamic business environment in the globe. Investors are searching on new way for higher yield; however it seems to be difficult in making investment decisions. Business organizations need money from it investors to high returns (Erkki, 2004). Now a day's investment areas for the individual investors are available on many more sectors.

Investment decision making task is difficult due to uncertainty and risk. The decisions of the investors are subjective because their decisions are based on the planned cost, their technical skills as well as their risk perception. Most of the investors are influenced by current economic indicators, financial statements of the firm, the output of technical analysis and internal information (Patil & Bagodi, 2021). This result is comparable to study of Mojgan and Ali (2011). Conclusion of Mojan and Ali is that financial indicators mainly per share earnings and dividends affect investors' decision to purchase shares.

To understand the investment decision, it is essential to know fundamental as well as well practical experience about investment process. The result of the review may support to understand better knowledge about investment decision. Investment decision is future oriented job so, outcomes is unknown. Eeckhoudt (2005) found that most of the investors are confused whether to decide fast or wait for without knowing the further information. In an investment decision, the investor has decided to make investment at one situation and outcomes depend on future movement, which is always uncertain.

Investment is the allocation of financial resources to earn money from those resources in the future. The business environment mainly financial and economical environments influence investment decision, hence planned results are unsure. Avram et al. (2009) define that investment decisions are taken after sincerely reviewing the proposed investment project. The risk exists because it is uncertain. This argument can compare the result of Kusumaningrum et al. (2019). They conclude their study that financial awareness has a positive effect, experience of investment has negative effect on investment decision, and risk tolerance is not play to mediate awareness experience on investment decisions.

These days individual investors 'attraction is growing rapidly in Nepal too. The common sectors for the investment to individual investors are financial, manufacturing, hydro power etc. In Nepal investment decisions related studies are very few. Most of the investors claimed that they have adequate knowledge to invest money on potential sectors (Adhikari, 2010). Similarly, (Kadariya, 2012) finds that news from Medias, political ideology, capital structure, luck, recommendations, financial information and changing trend of the Nepalese capital markets influence the investors' decision. Mr. Kadariya has participated youngsters for his study so, media coverage and friends' recommendations also contribute good source of information to buy stock.

 In addition, Thapa (2013) conducted a research study on investment behavior of individual investors in Nepalese stock market. Thapa finds his study that investors have no priority in the type of market for investment but their choice is short term profit. The result showed that there is lack of mature investors in the Nepalese capital market. Another finding of Mr. Thapa is that higher professional experience of investors tends to increase risk taking capacity. Therefore, investment behavior is influenced by investors' individual characteristics.

This review paper represents how individual investment decisions are influenced. To search the determinants that affect individual investment decision, various books, reports, review papers and research articles related to investment decisions are studied. Many researchers focus their study on

investment decisions in stock market in different countries. There is less exploration in the literature on investment decisions in renewable energy sector in Nepal as well as around the globe. The main objective of this paper is to identify the factors which influence individual investors 'decision making process in renewable energy sector such as hydropower, biomass, solar and wind energy.

2. Investment decisions in renewable energy

Sources or process which comes from constantly replenished is called Renewable Energy (RE). To meet increasing demand of energy, renewable energy play important role**. Dong et al. (2013) defines that use of sustainable energy resources are essentials to achieve sustainable development. Different economic and environmental factors such as pollution, climate change and global warming promoted to consume the renewable energy. The limited source of fossil fuel reserves and lack of long lasting access to them also encouraged use of sustainable energy. Furthermore, the expansion of energy use associated with the level of development of the country due to accessibility of energy resources. To satisfy human social and economic development, welfare and good health, use of renewable energy is increasing. Nowadays people are using such energy to fulfill their basic needs such as lighting, cooking, mobility and communication Edenhofer et al. (2011). Huge amount of renewable energy is important to achieve sustainable development in the energy sectors around the world. Supplies of renewable energy significantly decrease the production of greenhouse gases. Source of such energy is renewable resources, which are replenished naturally. Tester (2005) defines that promoting of renewable energy and reducing other is one of the best techniques to preserve of the earth for future generations. Rapidly increasing trend of total energy consumption they are becoming cheaper and more efficient. Tiwari and Mishra (2011) define that outstanding alternative among energy sector is renewable energy but it is growing with challenges too.

Masini and Menichetti (2012) found that the increased interest of investors in renewable energy sector become effective instrument to fulfill the financial deficits. Cheraghi, S. et al. (2019) conducted a study to find the factors affecting the decision making process in renewable energy investment in agriculture sector in Iran. The study identified that market policies, institutional pressure, knowledge of renewable energy technologies; prior belief and attitude toward technological innovations highly impact on renewable energy investment decision making process.

There are so many reasons which influenced renewable energy investment in many countries. Most common factors are population, government policies, income level and accounting information of the firm. Pfeiffer and Mulder (2013) concluded that level of income of the person positively influence renewable energy investment decision. They argued that higher level of income or GDP of the nation promotes renewable energy by supporting financial resources that are very much essential to establish the project. In addition they concluded that government policies directly affect the investment in renewable energy projects. Lack of favorable policies there is low investment in RE in Asian, African and South American countries. Bourcet (2020) stated that most of decisions are affected by environmental, economic and political factors. The study defined that many countries priorities to use of renewable energy to reduce the carbon footprint in the environment. It is considered as clean energy and increase in its use for electricity generation. Similarly, Biresselioglu and Karaibrahimoglu (2012) examined that

interventionist nature of left-wings parties support renewable energy investment. Same type of result concluded by Potrafke (2010) that left- wing parties' government formulated policies to support energy markets than right- wings parties leading government. Hence, different political ideology formulated different policies according to their principles, which influenced the renewable energy investment.

3. Individual investment decision making process

An investor is an individual that invest money into business for a financial return. Maximize the profit and minimize the risk is the main objectives of any investors. Who invest money in small quantities is called individual or retail investor. Hung L. C. et al. (2015) define that retailer investors are more passive than other kinds of investors. Further they explain that small investors tend to sell their shares before release of good news and buy shares before to bad news. Akbar, M. et al. (2016) conclude that advocate recommendations, image of the firm and neutral information influenced the individual investor' decision making. They further explain that investment decisions are not affected by accounting information, wealth maximization and personal needs of investors. They also suggested to the concerned top authorities to focus on proper regulation because other recommendations can easily manipulate the markets. Gill et al. (2018) conduct a research factors affecting investment decision behavior of individual investors and concluded that there is positive and momentous association between expected return and investment decision making behavior.

Individual investor's nature may be not same to each other and so they make varied investment decisions. Normally they make their economic decisions according to their own view. Individual investors also known as retail investors play key role in the market and identification of them is needed for academic and professional purposes (Akbar et al., 2016). Tanuir et al. (2016) states that perception and emotion may influence decision making from different ways. They conclude that emotion intelligence has considerable impact on investment decisions and play vial role in the selection of investment options. Investment decisions are significantly related to financial management decision. Financial management is the part of the financial literacy. Cooper et al. (2014) identifies that level of education, investment experience and financial literacy support to find expected risk. They claim that those are mature investors who have long term investment experienced.

4. Methodology

This study applied systematic literature review methodology to review and analyze articles related to investment decisions making in renewable energy. A diagrammatic demonstration of the methodology is shown in Figure 1.

4.1 Strategy to search the literature

This study recognized search criteria for the systematic literature review and conducted a search by knowing relevant keywords, time period, various databases, statistical techniques and content analysis. This study used Scopus, Science Direct, Emerald and other (Google Scholar) database for the literature search and Investment decisions, renewable energy, individual investors and systematic review are keywords. The time horizon spans for this study is around two decades (2003 to 2021). Database search conducted in September and October in 2021 that fulfilled the above criteria. After reviewing the title,

abstract and conclusion, this review paper included 61 articles for the review. Research articles, books and reports published and available in English language were considered.
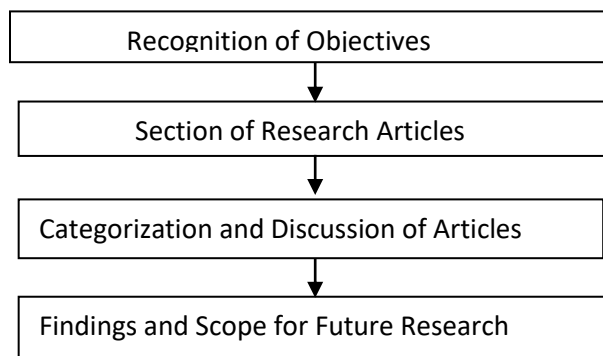
```
┌─────────────────────────────────────────┐
│        Recognition of Objectives          │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│       Section of Research Articles        │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│   Categorization and Discussion of Articles │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│    Findings and Scope for Future Research │
└─────────────────────────────────────────┘
```

Figure 1: Systematic literature review methodology

4.2 Recognition of Objectives

Investment in energy sector is growing around the world now days. The individual investors play key role in the securities market but there is less study about the factors which influences the individual investment decision in renewable energy sector.

4.3 Categorization and discussion of the literature

In this section, 265 research articles were collected through different database. Out of them 61 selected research articles were systematically categorized according to journal titles, year of publication, statistical techniques, type of research etc.

4.3.1   Sources of literature

Important journals in the area of study were analyzed. Results showed that 61 articles were spread over 30 journals out of four database systems matching with keywords. Table 1 shows that name of database, date of search, time span, number of journals from each database and number of articles from each journal.

Database	Date of search	Time span	No. of journals	No. of articles collected	No. of articles selected
Scopus	September 2021	2004-2021	9	82	23
Science Direct	October 2021	2004-2021	6	78	12
Emerald	October 2021	2004-2021	8	80	16
Google Scholar	September 2021	2004-2021	7	25	10

Total			30	265	61

Table 1: Classification of articles by sources

4.3.2   Type of research

After reviewing the literature according to the type of research and data helps to find the focus of previous research. This study divided the research studies into five types: descriptive, empirical, conceptual, analytical and others research. Survey and facts findings studies are included in descriptive, while observations related studies are classified under empirical. In conceptual research, development of the theory is included, where as studies that have analyzed previous models are included under analytical research. Finally, Review papers are included in the other category. Table 2 shows that classification of studies according to research. This study uses secondary data collected from different database.

Research	No. of articles
Descriptive	7
Empirical	30
Conceptual	8
Analytical	10
Others	6
Total	61

Table 2: Classification of articles by types of research

4.3.3   Statistical techniques

In this section, selected articles are classified according to statistical methods used by studies. Table 3 shows the result of statistical tools used by selected articles. Regression analysis, correlation analysis, ANOVA, t- test and multiple techniques were used by selected studies. The 3 table result shows that regression analysis is widely used technique in the area of research. Under the multiple techniques few articles applied chi- square test, variances and equation modeling.

Statistical techniques	No. of articles	%
Regression analysis	31	50.81
Correlation analysis	12	19.67
ANOVA	7	11.47
t- test	8	13.11
Multiple techniques	3	4.91

Table 3: Classification of statistical techniques by articles

4.3.4 Analysis of Citation

In this section, citations from selected articles are analyzed. We used Google Scholar to find the citations. We found that 57 out f 61 selected articles were cited. We did not found any citations for four articles. Out of them an article was published recently (2021), two were published in 2017 and another

was published in 2013. Chen F. (2011) is the most cited (902) article. 23 articles are cited more than 100 times. Table 4 shows the number of citations of articles related with keywords of the study.

SN	Articles	No. of Citations
1.	Peterson (2017)	606
2.	Rustichini et al. (2005)	101
3.	Valev et al. (2009)	108
4.	Eeckhoudt et al. (2005)	464
5.	Komendantova et al. (2012)	228
6.	Shaikh and Kalkundrikar (2011)	28
7.	Geetha and M. Ramesh (2012)	64
8.	Joseph (2015)	5
9.	Hadi (2015)	74
10.	Lutfi (2010)	30
11.	Deaves, Lüders, & Schröder, (2013)	216
12.	Musdalifa (2016)	1
13.	Akims & Jagongo (2017)	14
14.	Okech (2016)	2
15.	Tanusdjaja (2018)	17
16.	Obamuyi (2013)	142
17.	Cadoret and Padovano (2016)	127
18.	Neumayer (2003)	286
19.	Fouquet (2016)	189
20.	Abban and Hasan (2021)	7
21.	(Merikas et al. (2011)	117
22.	Choi et al. (2016)	28
23.	Lombardi (2009)	7
24.	Liu and Zhang (2011)	28
25.	Abor and Bokpin (2010)	212
26.	Houcine (2017)	43
27.	Chen F. (2011)	902
28.	Chong & Lai (2011)	37
29.	Akbar et al. (2016)	24
30.	(Merikas et al. (2011)	117
31.	Ahmad, (2017)	25
32.	Bashir et al. (2013)	38
33.	Ramnath et al. (2008)	711
34.	(Erkki (2004)	84
35.	Mojgan and Ali (2011).	10

36.	Eeckhoudt (2005)	255
37.	Avram et al. (2009)	28
38.	Kusumaningrum et al. (2019)	3
39.	(Adhikari (2010)	9
40.	(Kadariya, 2012)	46
41.	Dong et al. (2013)	77
42.	Edenhofer et al. (2011)	768
43.	Tester (2005)	572
44.	Tiwari and Mishra (2011)	321
45.	Masini and Menichetti (2012)	357
46.	Cheraghi, S. et al. (2019)	1
47.	Pfeiffer and Mulder (2013)	186
48.	Bourcet (2020)	57
49.	Biresselioglu and Karaibrahimoglu (2012)	39
50.	Potrafke (2010)	175
51.	Hung L. C. et al. (2015)	23
52.	Akbar, M. et al. (2016)	24
53.	Gill et al. (2018)	43
54.	Tanuir et al. (2016)	11
55.	Cooper et al. (2014)	28
56.	Bhanusireesha and Sreelaxmi (2013))	26
57.	Karneyeva and Wiistenhagen (2017)	121

Table 4: No. of citations of articles

4.3.5 Year of publication

The time horizon spans for this study is around two decades (2003 to 2021). Articles published in 2011, 2013 and 2017 were studied more (8 articles from each year). Table 5 shows that 57.377% articles used primary data where as remaining depend on secondary. This represents that both types of data may use to identify the individual investment decision making process.

Year	Primary	Secondary	Total
2003	1		1
2004		1	1
2005		1	1
2008		1	1
2009	1	2	3
2010	2	3	5
2011	4	4	8
2012	4	1	5
2013	6	2	8

2014		3	3
2015	3	1	4
2016	5	1	6
2017	4	4	8
2018	1	1	2
2019	2		2
2020		1	1
2021	2		2
Total	35	26	61

Table 5: Articles according to year of study and type of data

5. Analysis and Findings

The gathered subthemes are classified into five different headings for analysis. Firstly, different types of risks such as business and policy risks associated with the investment decisions are analyzed. In addition, association between demographic factors and investment decisions are explained with the reference of literature. Similarly, effects of government policies on renewable energy investment decisions are found. Furthermore, connection between accounting information of the firm and investment decisions are analyzed with the support of previous studies. Finally, association between advisors recommendations and investment decisions are investigated.

Factors	Empirical findings
1. Risks	Peterson (2017) found that risk and uncertainty could not be neglected at the time of decision making. The behavior of people at the time of investment become risky, ambiguous and uncertain (Rustichini et al., 2005). Valev et al. (2009) concluded that loss of capital, return below the estimation and economic uncertainty are common factors associated with investment decision. Eeckhoudt et al. (2005) found that risk is the sensitive factor and brings new information. It means that risks are future oriented and we should care about the risks. Komendantova et al. (2012) explained that business risks (financial, capital, market, and future power price) influenced the investment decisions. Karneyeva and Wiistenhagen (2017) highlighted that policy risk of solar energy highly affect the investment decisions in the European Union as well as least developed countries.
2. Demographic factors	Shaikh and Kalkundrikar (2011) examined the demographic factors effect on investment decisions. They concluded that investor's age, academic qualification; income level has significant effect to investment decisions. Geetha and M. Ramesh (2012) conducted a study about demographic factors in investment decisions in India. The study revealed that some of the investment decisions such as priority of investment selection,

	investment period, frequency of investment and analytical abilities were significantly influenced by demographic factors in India. This evidence is more useful for demographic factors such as age or maturity, income level and academic qualification of investors. Bhanusireesha and Sreelaxmi (2013) conducted a study on "impact of demographic factors on investment avenues and found that gender and age mostly influencing the investment decisions. They further concluded that people were traditional in nature and less concerned for money multiplication. Demographic factors have lead individual behavior when taking financial decisions (Joseph, 2015). Individual skills and ability can increased with age (Jolaosho, 2017), because they able to manage time effectively (Hadi, 2015). Lutfi (2010) stated that male investors preferred to invest their money in the capital market with high risk while female investors preferred to invest banking sector with lower risk. The research conducted by (Deaves, Lüders, & Schröder, 2013), (Musdalifa, 2016) and (Akims & Jagongo, 2017) showed that gender behavior influenced investment decision making process. Okech (2016) explained that person's level of education associated with the tolerance for the investment risks faced. Monthly income earned by person influenced investment decision (Tanusdjaja, 2018). Marital status affected the financial decisions because married persons have high level of confidence (Obamuyi, 2013).
3. Government policies	To ensure the private, public and foreign investment in renewable energy sector, many countries formulate the support policies. Cadoret and Padovano (2016) identified that government orientation affects the policy making process and policies may influenced the investment. They further explained that left- wing political system is more likely to support renewable energy investment than right- wing. According to this statement it can be defined that government policies are external factors and they directly affect the operation of the firm. Policies are formulated as well as implemented by the government and political system of the country made the government. Therefore, political ideology play key role in policy making process which directly influences the investment decisions. Similarly, Neumayer (2003) found that leftist has better quality to incorporate long term policies than others. Fouquet (2016) concluded that large quantity production of RE varies among the countries due to political commitment and policies formulated by government. Huge amount of capital is required to complete the energy projects. So, renewable energy targets closely depend on the level of investment. A

	recent study, Abban and Hasan (2021) identified that left and central-oriented both types of political parties promotes renewable energy investment more than a right- oriented ideology political party system. They confirmed their study that political ideology influenced the policies formulated by government and policies also directly affected to renewable energy investment. They further investigated that presidential and parliamentarian system promoted renewable energy investment than other political system. Policies are the external factors and these influence short and long term investments. Investors should gain knowledge about the policies related with their business
4. Accounting information	Accounting information is communicated through the financial statements such as income statement, balance sheet, statement of cash flow and statement of change in stockholder's equity. Accounting information played vital role to buy stock (Merikas et al. (2011). Accounting information includes financial performance, financial position, earning price per share, dividend per share, book value per share, market price per share etc. Stock price is largely affected by corporate earnings (Choi et al., 2016). The result showed that firms' earnings attract the investment. Patel, B.and Modi, V. (2017) found that investment decisions are majorly affected by financial information of the firm and less impact of demographic factors. Lombardi (2009) stated that investment decisions on projects depend on payback period of the projects. Liu and Zhang (2011) found that trading volume, market capitalization and company's existence in the market influenced the investors' decision. Abor and Bokpin (2010) argued that investors more concerned about dividend policy, profitability and stock market development of the firms. Investors more concerned with accounting information because it helped them better understand the company's operating situation (Houcine, 2017). Chen F. (2011) explained that financial information is one of the important inputs in decision making regarding capital allocation that is investment.
5. Advocate recommendations	This includes recommendation provided by individual stock broker, brokerage house and friends. It is important source of information and one of the affecting factors in investment decisions making (Chong & Lai, 2011). Akbar et al., (2016) found that there is key association between advocate recommendation and individual investment decisions. Others researchers also agreed that brokerage house' recommendation, family member and friends or co-workers opinion influenced the investment

	decisions (Merikas et al., 2011; Ahmad, 2017). Bashir et al. (2013) explained that individual investors pay their attention on family member and friends' opinion rather than brokerage recommendation. It is appropriate to the investors who have little knowledge about the market. This is also useful to new comers as well as who couldn't properly understand accounting information of the firm. Advisors can collect and process information scientifically so, they may provide better suggestions (Ramnath et al., 2008). It is possible because advisors have basic knowledge and experience about the securities market.

6. Research gaps

In this section, we try to identify research gaps on factors influencing investment decisions in renewable energy sector in Nepal. After reviewing the literature we have recognized the subsequent issues that are considerable to our research area.

6.1 Limited study

Investment decision in renewable energy sector is relatively new. There is less exploration about the investment decisions in renewable energy than other aspects of renewable energy. Most of the available literatures on investment decisions are related to stock market.

6.2 Limited studies on government policies

Limited studies have been explored on government policies and individual investment decisions. Above result showed that there is significant association between government policies and investment decision but few studies are available.

7. Scope for future research

The purpose of this paper is to determine factors affecting investment decisions in renewable energy sector and to address the question as to what factors are more considerable at time of investment. The discussion and findings of research has generated many issues for future research. Initially, future research studies can focus on energy sector because it occupies huge amount of capital. Nowadays new investors are adding in the security markets everywhere. Furthermore, more priority should be given to primary source based research because this study result shows that only 57.377% of the literatures are used primary data. In addition, other than individual investors study can be carry out by mixing different types of investors like mutual funds, pension funds and investment advisors.

References:

1. Abban, A., & Hasan, M. (2021). Revisiting the determinants of renewable energy   investment – New evidence from political and government ideology. Energy Policy. https://doi.org/10.1016/j.enpol.2021.112184

2. Abor, J. et al. (2010). Investment opportunities, corporate finance, and dividend payout policy: Evidence from emerging markets. Studies in Economics and Finance 27: 180–94.

3. Adhikari, P. (2010). Investment behavior of Nepalese investors. Nepal Journal of Management, 3(1) 48-58.

4. Aguirre, M., & Ibikunle, G. (2014). Determinants of renewable energy growth: a global sample analysis. Energy Policy. 69, 374–384.

5. Ahmad, S. (2017). Factors Influencing Individual Investors' Behavior: An Empirical Study of Pakistan Financial Markets. Journal of Business & Financial Affairs, 6(4). doi:10.4172/2167-0234.1000297

6.   Akbar, M. et al. (2016). Factors Affecting the Individual Decision Making: a Case Study of Islamabad Stock Exchange. European Journal of Economic Studies, 2016, Vol. (15). pp. 242-258. DOI: 10.13187/es.2016.15.242

7. Akims, M. A., & Jagongo, A. (2017). Financial Literacy And Its Impact On Investment Decisions In Nigeria: A theoretical perspective. International Journal of Scientific Research and Innovative Technology, 4(11), 18-30.

8. Avram, E. L. et al. (2009). Investment decision and its appraisal. DAAAM International, Vienna, Austria, EU, 2009, Vol. 20, No. 1, p. 1905-1906.

9. Bashir, T. et al. (2013). An Assessment Study on the ''Factors Influencing the Individual Investor Decision Making Behavior''. IOSR Journal of Business and Management, 9(5), 37-44.

10. Biresselioglu, M.E., Karaibrahimoglu, Y.Z. (2012). The government orientation and use of use of renewable energy: case of Europe. Renew. Energy 47, pp. 29– 37.

11. Bourcet, C. (2020). Empirical determinants of renewable energy deployment: a   systematic literature review. Energy Econ. 85, 104563.

12. Cadoret, I., Padovano, F. (2016). The political drivers of renewable energies policies. Energy Economics, Elsevier, vol. 56(C), pages 261-269.

13. Chen, F. et al (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. The Accounting Review, 86 (4): 1255-1288

14. Cheraghi, S.et al. (2019). Factors Affecting Decision-Making Process in Renewable Energies Investment in Agricultural Sector, Iran. Journal of Agricultural Science and Technology Vol. 21, pp. 1673-1689.

15.   Choi, J. et al. (2016). Earnings news, expected earnings, and aggregate stock return. Journal of Financial Markets, 29, pp. 110-143.

16. Chong, T. P., & Lai, M. M. (2011). An empirical evidence of factors in equity selection process in Malaysia. African Journal of Business Management, 5(15). https://doi.org/10.5897/AJBM11.228

17. Cooper, W. et al. (2014). Two-stage financial risk tolerance assessment using data envelopment analysis. European Journal of Operational Research, 233, 273–280.

18. Deaves, R. et al. (2013). The Dynamics of Overconfidence: Evidence from Stock Market Forecasters. Journal of Economic Behavior & Organization, (July), 1–37. https://doi.org/10.1016/j.jebo.2010.05.001

19. Dong, C. et al. (2013). Robust Planning of Energy Management Systems with Environmental and Constraint-Conservative Considerations under Multiple Uncertainties. Energ. Convers. Manag., 65: pp. 471-486.

20. Edenhofer, O. et al. (2011). Renewable Energy Sources and Climate Change Mitigation. Cambridge: Cambridge University Press.   http://dx.doi.org/10.1017/CBO9781139151153

21. Eeckhoudt, L. et al. (2005). Economic and Financial Decisions under Risk. Princeton   University Press, New Jersey, USA energy sources. Royal Society of Chemistry.
    Energy Econ. 56, 261-29. https://doi.org/10.1016/j.enpol.2009.12.008.

22. Erkki, H. (2004). The Effect of Liquidity Gaps in Financing the SME Sector in Emerging Market of Emerging Market in Poland. International Journal of Business and Social Sciences, 2(23) 566-567.

23. Fouquet, R. (2016). Historical energy transitions: speed, prices and system   transformations. Energy Research and Social Science 22, 7-12.

24. Geetha, N., & Ramesh, M. (2012) "A Study on Relevance of Demographic Factors in Investment Decisions" Perspectives of Innovations. Economics & Business, Vol-10.

25. Gill, S. et al. (2018). Factors effecting investment decision making behavior: The mediating role of information searches. European Online Journal of Natural and Social Sciences, 7(4): 758-767. https://doi.org/10.1016/j.enpol.2017.04.005.

26. Hadi, N. U. (2015). Impact of Entrepreneur's Demographic Characteristics and Personal Characteristics on Firm's Performance under the Mediating Role of Entrepreneur Orientation. Review of Integrative Business and Economics. pp 35–52.

27. Houcine A. (2017). The effect of financial reporting quality on corporate investment efficiency: Evidence from the Tunisian stock market. Research in International Business and Finance, 42: 321-337.

28. Hung , L. C. et al. (2015). The informational role of individual investors in stock pricing: Evidence from large individual and small retail investors. Pacific-Basin Finance Journal V.31. pp. 36–56. https://doi.org/10.1016/j.pacfin.2014.12.001

29. Jolaosho, S. G. (2017). The effect of age of community pharmacists and business on entrepreneurial orientation. World journal of pharmacy and pharmaceuticals sciences, 6(11), 38-51. https://doi.org/10.20959/wjpps201711-10220

30. Joseph, C. N. (2015). Illusion of Control dan Faktor Demografi dalam Pengambilan. Keputusan Investasi. Jurnal Ekomoni Peluang, 9(2).

31. Kadariya, S. (2012). Factors affecting investor decision making: A case of Nepalese capital market. Journal of Research in Economics and International Finance (JREIF),1(1), 16-30.

32. Karneyeva, Y., & Wüstenhagen, R. (2017). Solar feed-in tariffs in a post-grid parity world: the role of risk, investor diversity and business models. Energy Pol. 106, 445–456.

33. Komendantova, N. et al (2012). Perception of risks in renewable energy projects: The case of concentrated solar power in North Africa. Energy policy. Volume 40, pp. 103-109. ttps://doi.org/10.1016/j.enpol.2009.12.008

34. Kusumaningrum, et al. (2019). Factors Affecting Investment Decisions: Studies on Young Investors. International Journal of Academic Research in Accounting, Finance and Management Sciences Vol. 9, No.3, pp. 10–16.

35. Liu, Laura Xiaolei, and Lu Zhang (2011). A Model of Momentum. Working Paper No. 16747. Cambridge: NBER

36. Lombardi, D. (2009). Business Investment under Uncertainty and Irreversibility. The Oxonomics Society 4: 25–31.

37. Lutfi. (2010).The relationship between demographic factors and investment decision in Surabaya. Journal of Economics, Business and Accountancy Ventura, 13(3), 213–224.

38. Masini, A. and Menichetti, E. (2012). The Impact of Behavioural Factors in the Renewable Energy Investment Decision Making Process: Conceptual Framework and Empirical Findings. Energy Policy, 40: 28-38.

39. Merikas, A. et al. (2011). Economic factors and individual investor behavior: The case of the Greek stock exchange. Journal of Applied Business Research, 20(4), 93-98. https://doi.org/10.19030/jabr.v20i4.2227.

40. Merikas, A. et al. (2011). Economic Factors and Individual Investor Behavior: The Case of The Greek Stock Exchange. Journal of Applied Business Research, 93-98.

41. Mojgan, S., & Ali, M. (2011). Examining the effect of earnings per share and cash dividends per share on investor decision making in Tehran Stock Exchange from the capital market participants' view. American Journal of Scientific Research, 36, 99-106.

42. Musdalifa, M. (2016). Pengaruh Locus of Control, Financial Knowledge Dan Income Terhadap Keputusan Berinvestasi Masyarakat Kota Makassar. Doctoral dissertation, Universitas Islam Negeri Alauddin Makassar.

43. Neumayer, E. (2003). Are left-wing party strength and corporatism good for the environment? Evidence from panel analysis of air pollution in OECD countries. Ecol. Econ. 45, 203–220.

44. Obamuyi, T. M. (2013). Factors influencing investment decisions in capital market: A study of individual investors in Nigeria. Organizations and Markets in Emerging Economies, 4(7), 141-161.

45. Obamuyi, T. M. (2013). Factors influencing investment decisions in capital market: A study of individual investors in Nigeria. Organizations and markets in emerging economies, 4(07), 141-161.

46. Okech, T. C., & Mukoba, M. T. (2016). Analysis of Gender Differences in Investment Behavior among Employees in Kenya's Listed Companies. International Journal of Economic, Commerce and Management. Vol. IV. Pp. 707-723.

47. P. Bhanu Sireesha& Ch. Sree Laxmi (2013) "Impact of Demographics on Select Investment Avenues: A Case Study of Twin Cities of Hyderabad and Secunderabad, India". International Journal of Marketing, Financial Services Management Research Vol.2, No. 6.

48. Patel B. Modi V. (2017). Impact of Demographic Factors on Investment Decision: an empirical study from South Gujarat Region. International Journal of Latest Engineering and Management Research (IJLEMR). Volume 02 - Issue 12. PP. 01-08

49. Patil, S., & Bagodi, V. (2021). "A study of factors affecting investment decisions in India: The KANO way". Asia Pacific Management Review.

50. Peterson, M. (2017). An introduction to decision theory. Cambridge University Press.

51. Pfeiffer, B., & Mulder, P. (2013). Explaining the diffusion of renewable energy technology in developing countries. Energy Econ. 40, 285–296.

52. Potrafke, N. (2010). Does government ideology influence deregulation of product markets? Empirical evidence from OECD countries. Publ. Choice 143, 135–155.

53. Ramnath, S. et al. (2008). The financial analyst forecasting literature: A taxonomy with suggestions for further research. International Journal of Forecasting, 24(1), 34-75.

54. Rustichini et al. (2005). A brain imaging study of the choice procedure. Games and Economic Behavior, Vol. 52, pp. 257-282.

55. Shaikh, A. R., & Kalkundrikar, A. B. (2011). Impact of demographic factors on retail investors' investment decisions- An exploratory study. Indian Journal of Finance, 5(9),   35 – 44.

56. Tanusdjaja, H. (2018). Keputusan Investasi Investor Invidu Berdasarkan Kompetesni, Overconfidence, Dan Pendidikan. Journal Muara Ilmu Ekonomi Dan Bisnis, 2(1), 234-244.

57. Tanvir, M. et al. (2016). Investor's Emotional Intelligence and Impact on Investment Decision. International Journal of Academic Research in Economics and Management Sciences 2016, Vol. 5, No. 3, DOI: 10.6007/IJAREMS/v5-i3/2237.

58. Tester, J. W. (2005). Sustainable energy: Choosing among options. London: MIT Press.

59. Thapa, B. S. (2013). The investment behavior of individual investors in Nepalese stock Market. The Nepalese Management Review, 16(1), 1-12.

60. Tiwari, G. N., & Mishra, R. K. (2011). Advanced renewable energy: case of Europe. Renew. Energy 47, 29–37.

61. Vlaev, I. et al. (2009). Dimensionality of risk perception: Factors affecting consumer understanding and evaluation of financial risk. Journal of Behavioral Finance, 10, 158-181.