

## Herding Because of Bayesian Learning/Informational Cascades or Social Pressure? An Experimental Study

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### Article History:

#### Received:

11 April, 2023

#### Revised:

20 June, 2023

### ABSTRACT

**Purpose:** Herding behavior remains a debatable topic in behavioral finance. In past many researchers studied different aspects of Herding behavior and suggested it to be as an important factor in financial decision-making. The purpose of this study is to analyze whether herding exists or not? If yes, is it a rational or irrational process? And how do different personality's traits have an impact on the decision makers' choice of herding?

**Design and Methodology:** An online program was designed on MATLAB to experience the real time herding behavior of both male and female subjects. An experimental design was administered to 30 respondents in a lab setting; out of 30 respondents 21 were males, and 9 were females having different educational & professional backgrounds. Data on personality traits was gathered through Eysenck's Impulsivity, Venturesomeness, and Empathy (IVE) questionnaire.

**Findings:** Result indicated that herding exists and herding behavior can be a result of the both rational and irrational thinking process. Some of the personality traits have an impact on herding behavior, while others did not show any impact on herding behavior

**Implications:** The findings provided useful insight for policymakers and investors.

**Keywords:** Herding behaviour, behavioral finance, personality's traits

## 1. Introduction

Behavioral finance reveals (in opposition to fundamental finance) that most of the time, human beings (Investors) are not rational in making their financial decisions. Instead of presuming that investors always act rationally, behavioural finance holds that people might be adversely affected by behavioral biases. Behavioural finance relates to the psyche of investors and its role in financial decision making. We know that humans have emotions which can influence their decisions. One of the reasons behind people's irrational financial choices is herding. We are surrounded by complex social structures that provide ground for and organize most part of our behavior (Richerson & Boyd, 2005). Herding is one of those behavioral decisions of investors in which they follow the whole group while suppressing their own beliefs and personal information,

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which ultimately affects their stock returns either positively or negatively. Herding is one of those convergent behaviors that continuously link our behavior with each other. Herd is a result of the collective thinking of a group (herd) due to local interaction without any central coordination. Different domains consider herding as quite influential and well documented feature especially when it comes to economics and finance (Sornette et al., 2009; Shiller, 2000; Shiller, 2002). However, herding can result from Bayesian learning/informational cascades, which is a rational decision-making process. This study aims to analyze whether people going for herd is a rational or irrational phenomena.

Market players do their best to earn maximum profit and avoid loss. Their financial decisions determine whether the end result will be in the form of profit or loss. These financial decisions are affected by different kinds of elements a decision maker faces, like the information they have while processing a decision. One very important source of information is knowledge about the herd's choice in a particular situation. Herding proves to be an important determinant in analyzing a particular decision in a given situation.

In the preference of rational herding, economists have chosen the idea and struggled to explain those scenarios where investors "herd" in rational manner. At first, they observed the areas outside the globe of finance, such as the choices of technology and fashion. Informational herding occurs in scenarios in which individuals derive the information of others and observe their actions and then follow the actions of consensus by ignoring their private information. In certain situations, managers ignore their significant private information and follow the actions of other managers regarding investment decisions. Although managers' this behavior is not efficient in a social point of view, but behavior of managers is rational in their own perspective, because in the labor market they are anxious about their status (Scharfstein & Stein, 1990).

Herd's choice is one of the sources that provide a better direction about the end result of any financial decision. It is quite evident from past studies that people tend to go with herd's choice to take decisions that prove to be fruitful in terms of profit maximization. Some call this a safe choice where one has to analyze the decision taken by a bunch of people and then follow them while making their own decision to have a good result. However, herding itself is quite a complicated phenomenon that needs to be studied from the different perspectives that can influence people's choice to follow herd. herding" is one of the major causes behind stock price bubbles (Dong et al, 2010)

Past studies prove that herding can be a result of both rational and irrational thinking (Lindhe, 2012). However, statistics from the past do not support any of the side (rational or irrational) in a percentage that determines the dominance of one side. This lead to the need of a research study that analyzes the herding behavior in terms of rational or irrational thinking processes. Similarly, personality traits have impact on different behaviors of human being which was proven in the past by different research studies. In this regard, herding behavior can be influenced by an individual's different personality characteristics.

The rest of the paper is divided into four sections. The second section discusses the literature review and hypothesis. The third part explains the methodology that has been used. The fourth section discusses the results and findings of the study. Lastly the fifth section explains the conclusion, limitations, and future directions.

## **2. Literature Review**

Scharfstein and Stein (1990) explained Herding as one of those behavioral decisions of investors in which they just follow the whole group while suppressing their own beliefs and personal information, which ultimately affects their stock returns either positively or negatively. Bikhchandani and Sharma (2000) explain in their study that it is normal for a group of investors with the same information to invest in the same asset for their profit maximization. But the real herding behavior is when an investor, having different information than the group, invests in an asset where others are investing. The decision of the group of investors influences the individual's decision regarding the same asset and involves them in herding behavior (Park & Sabourian, 2006). Cutler et al. (1989) and Shiller (1989) argue that the major differences in stock prices don't need to be because of the coming of new information or because of changes in essential economic variables, but the reason might be the phenomena of herding behavior or crowd effects

Herding is the propensity for people (or organisations) to imitate the actions of others as a result of interactive observation of one another's behaviour in the financial sector (Hirshleifer and Hong, 2003). The practice of herding, according to Erdenetsogt and Kallinterakis (2016), believes that people imitate the actions of others without consideration for their signals or the existing market fundamentals. The field of behavioural finance investigates how psychological factors influence how people behave, which impacts asset price changes. According to Hon et al. (2021) standard financial models, people are assumed to be rational and risk-averse.

Bikhchandani and Sharma (2001) argued in their study that those investors are part of herding, who are completely aware of their personal information, but still they decide to invest in those stocks where others are investing. They further explain that the herding can be done in two situations, first is when an investor's personal information leads him/her to invest in a respective stock but he/she does not invest in it, because other investors claim that stock is non-profitable or less profitable. Another scenario is that when an investor (without the information about others) invests in some stocks but changes his decision after knowing that others are not interested in it, this will also be a part of herding, and this regular herding behavior of investors causes the volatility in financial markets (Christie & Huang, 1995).

Tan et al. (2007) reported that economists and practitioners have a significant interest in the herding behavior of investors in financial markets. Behavioral effects on the stock prices are interesting for economists. Herding among investors can cause gainful investing opportunities, that is why practitioners are interested in it. The literature revealed that stock prices show much

instability than estimated volatility (Lux, 1995). A study reports that the herding behavior of investors can also cause the financial crises (Chari & Kehole, 2004). Denenow and Welch (1996) found that excessive herding among investors takes place in financial markets.

Generally, in herding literature, there are two types of herding behavior, rational herding (also known as intentional herding) and irrational herding (Chang et al., 2000). When an investor blindly/completely ignores his/her information in favor of information about other's information then it is irrational herding, which is explained by psychological point of view (Devonow & Welch 1996). In support of this argument, the study of (Christie and Huang, 1995) revealed that the level of herding increases in the stressful market situation. Bikhchandani and Sharma (2001) referred to rational herding as the result of information cascade and information learning. In this case when investors have to invest in similar assets, and they are not sure about the quality of public information, in result they observe and follow the actions of other investors.

By following the study of Baddeley et al. (2007) we are focusing on these two major categories of herding, 'rational and irrational', by linking rational herding with the theories of Bayesian learning and irrational herding with the socio-psychological explanations in which the focus will be on pure elements of socio-psychology.

## **2. Bayesian Learning and Informational Cascades**

In the preference of rational herding, economists have chosen the idea and struggled to explain those scenarios where investors "herd" in rational manner. At first, they observed the areas outside the globe of finance, such as the choices of technology and fashion. Informational herding occurs in scenarios in which individuals derive the information of others and observe their actions and then follow the actions of consensus by ignoring their private information. In certain situations, managers ignore their significant private information and follow the actions of other managers regarding investment decisions. Although managers' this behavior is not efficient in a social point of view, but behavior of managers is rational in their own perspective, because in the labor market they are anxious about their status (Scharfstein & Stein, 1990).

Simon (1955) elaborates that conventional economic and financial theories have strong assumptions about efficient markets, rational expectations, self-interested and independent individuals. Although these strong assumptions have some limitations, and based on these limitations, more modern analyses has been developed to explain the restrictions on rationality forced by imperfect information. There is lot of uncertainty all around the world, an individual can make rational choices by applying the ethics of statistical inference using Baye's theorem (Salop 1987). Keynes (1937) explained that Bayesian herding explanations lie additionally with these ethics of rational behavior to situations where different decisions of the individuals are reinforcing and mutually dependent. And individuals rationally found that the actions of other people contain positive/useful information. Therefore these individuals will disregard their useful private

information in favor of the herd's actions (Scharfstein & Stein, 1990). Chamley (2003) and Bikhchandani et al. (1992) have discussed another significant feature of rational herding, that individual will be reached at a stable solution because it is a convergent process. Putting all these aspects together, 'herding' can be explained as a Bayes rational reaction to imperfect information. In Bayesian learning, individuals draw a priori probability because of a wide range of available information. And this information includes social information, which comes from the actions taken by others in a herd or group; that's how an individual's Bayes rational actions create a convergence onto result which is determined by the group's social information instead of private information.

Banerjee (1992) presented a model of herding in which he described that people usually observe the actions of others. He argued that in their daily life activities, people herd in a rational manner, but potentially their process of information gathering is misguided. A related model of chronological decision-making is presented by Bikhchandani et al. (1992) in which informational cascades is explained in the term of conformity when an individual rationally follows his/her predecessor's action and ignores his/her private information as described in Banerjee's model of chronological decision making. The author also described a unique phenomenon regarding herd behavior that when an individual is in imperfect information situation, in which individual has no or minimum information about the actions of group on a specific decision then he/she will follow his/own personal information to make a specific decision. On the other hand, when an individual is in perfect information situation, in which he/she has full fledged information about the actions of other group members then the chance of herding are high and in this case most of the individual go for the herd's choice. (Chojil et al., 2022) Individuals acting in a group setting without a clear leader exhibit herd behaviour. Both humans and animals may exhibit this behaviour in a variety of settings. The 'subprime crisis' marked a turning point in herd behaviour studies..

To testify the theories of Bayes rational herding, huge numbers of economic experiments have been conducted, initially by (Anderson & Holt, 1996; 1997). But these experiments only found that herding is consistent with Bayesian updating; they do not appraise challenging explanations for the similar consequences. In recent times Alvey et al., (2007) and Celen and Kariv (2004) and many other authors have adopted experimental confirmation to create a difference between herding as general kind of imitating other's behaviors and informational cascades as a precise kind of wisdom that occurs in the situation with lot of uncertainty. All of these experimental results are mostly similar with Bayes rational herding.

## **2.2. Social-Psychology**

It is described in previous discussion about bayesian theories that people tend to rationally update their probabilistic judgements on the information of the actions of others while taking a decision. Bayesian theory assumes that people behave in a homogenous manner, which means that, generally, different people have similar behaviors. Salop (1987), Tversky and Kahneman (1974)

and Baddeley et al. (2005) argued in their studies that generally decision-making is not only an objective process of statistical inference which are described in Bayes theorem. It is difficult for people to apply these theories in their general activities as well as taking financial decisions. As it is described in Banerjee's example when rationally observed actions of others can cause an information cascade and lead to a wrong direction. Elster (1998) and Baddeley (2010) precisely explained and give evidence that just like daily life decision making, economic/financial decisions are also significantly affected by the individual's personality characteristics. Studies reveal that weather has a significant impact on the mood-changing process, which ultimately fluctuates the emotions of individuals, and this is how the decision-making process will be affected (kamstra et al., 2003, Hirshleifer & Shumway 2003). To highlights the role of personal characteristics, Lo, Repin and Steenbarger (2005) acknowledged the personality characteristics and greed/fear activities of day traders. Shive et al. (2005) also identified the association of an individual's risk-taking behavior and emotional response.

Above mentioned studies, and many others like them, propose that individual's emotion and mood are dependent to their personality characteristics which after all affect their decision making process. It is proven that the variation in mood, emotions and different personality traits can also affect economic and financial decisions. Studies conclude that weather has a positive impact on the mood of an individual and these weather related moods have an impact on financial markets (Kamstra et al., 2003; Hirschleifer et al., 2003). Lo et al. (2005) have clarified the roles of different personality traits and found their relationship with greediness in the behavior of investors. More recently, Lin (2012) found in his study regarding personality traits and herding bias that impetuous, confident and anxious investors have different level of herding biases. The author also clarifies the mediate relation of risk tolerance level between these three personality traits and herding bias. This recent study and all of the above-mentioned studies prove that financial/economic decision of an individual significantly depends on his/her mood, emotions and specific personality traits. Similarly it is assumed that socially focused psychological characteristics, such as conformity and extraversion, also affect tendency to herd. Many other psychological phenomena are there when it's about decision making. Among them, gender and age are also very affective variables that can affect the process of one's decision-making (Lizárraga et al., 2007). Gill et al. (1987) found in their study that compared to men, women are more influenced by the outer environment, and they take much time to decide. Craik and Salthouse (1992) also found Age as an affective variable in their study in which they were observing the informational process of older people. It is revealed that retired people tend to remain calm in taking a decision; this may be because of their experience of working (Spaniol & Bayen, 2005). So all this shows that Age is an important factor that can change people's mind to take a specific decision.

On the basis of this discussion, other justifications can be made from doctrines of social psychology spotlighting the group/crowd pressure as Le Bon (1896) analysis of mob psychology and crowd pressure. In the domain of social psychology, Milgram (1963) and Haney et al. (1973)

have done studies and found that group/crowd or social pressure can significantly affect individual decisions, and it is probable that this social pressure can also affect the financial decisions.

H1: Investor's financial/economic decision-making within the group is affected by Social information.

H2: Herding is bayesian-style learning approach.

H3: Emotional personality characteristics of an individual lead him/her into herding.

### 3. Methodology

#### 3.1. Behavioral herding model:

In this section, behavioral analysis includes a detailed analysis of the significance/relationship among the personality/social characteristics of the respective experimental subject and his/her propensity to herd in different situations. The focal point will be on getting an answer about whether or not social traits are related (negatively or positively) to sociability affecting herding propensities. So, it is assumed that sociable people are more approachable to social pressure, social influence will work more powerfully in empathic and conformist people, and will work less powerfully in venturesome and impulsive individuals. Age and Gender is included because we have evidence from (Walker & Andrade, 1996) that regarding age, conformity is an inverse utility. In contrast, gender included in (Milgram, 1963) found that conformity level is high in women.

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#### Research Instrument

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Variable	Scale	Authors adopted from:
Impulsivity	Eysenck's Impulsivity, Venturesomeness and Empathy (IVE) questionnaire	Eysenck and Eysenck (1978)
Venturesomeness		
Empathy		

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#### 3.2. Task Design

Different ways are used for simplification of task and for the context in which task has to be performed. First is to avoid complications arising due to the attitude of loss aversion. It was ensured that the choices presented to the subjects did not involve the risk of losing any money. The other thing to do for the establishment of a prior probability of 50% is designing the task in a way that subjects should face clear choices. These choices should be mutually exclusive and independent so that neither was considered objectively better or worse.

A logical and systematic strategy for modifying certain stimuli or environmental factors to observe changes is provided by experimental design. The law of the single variable served as the

basis for the oldest type of experiment (Sahoo, 2019). The task used in this study is designed by using MATLAB, a computer-based software. In the past computer-based designs were justified by numerous studies (Reysen, 2005; Pillas, 2006). Pillas (2006) gave description about the experiment's general settings which includes experimental situation and designing of the task. Information presented to the respondents is of two kinds: first, information is related to two stocks – A and B, and second information is about herd's choices. Visual layout of information presented is shown in Fig 1, where Stock A is on left side and Stock B is on right side of the screen.

### 3.3. Stock Price Information

Charts containing information related to daily price of two stocks over the period of 30 days were presented to the respondents. To avoid familiarity with stock patterns, 30 different kind of stocks were used and it was ensured that there will be randomization in stock position. To avoid the negative or positive impact of stock performance on respondents' choice it was ensured that information about herd's choice should be presented in a way that there was no right or wrong answer. Objectively, there is no correct or incorrect alternative, so every stock has a 50% probability of being chosen by the respondents.

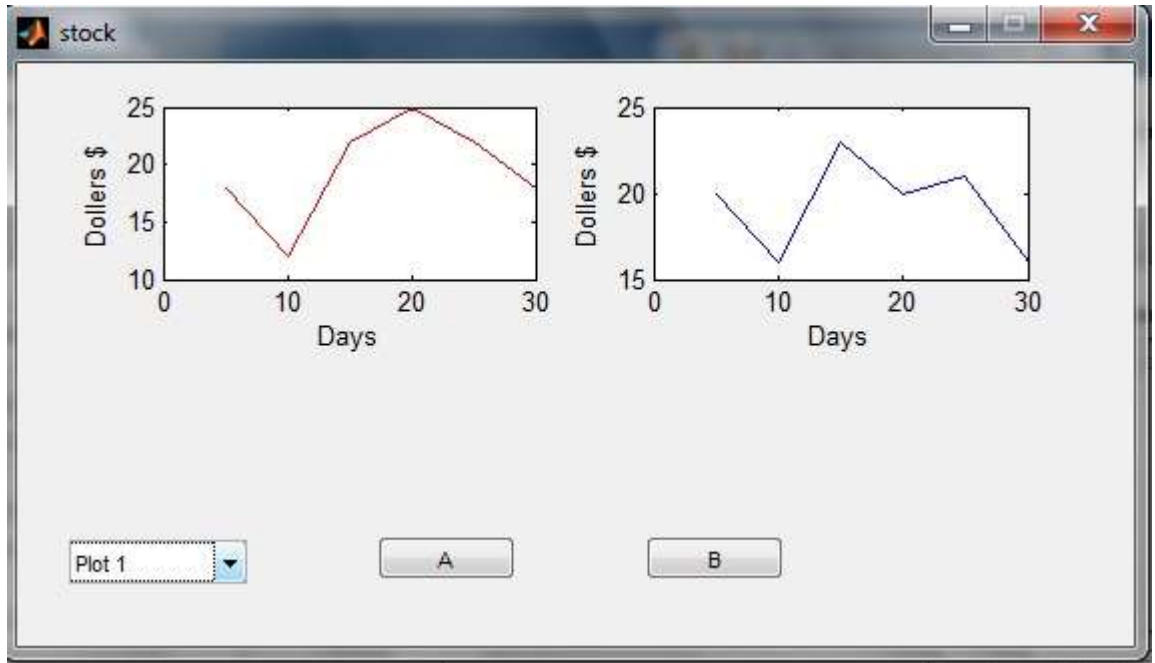
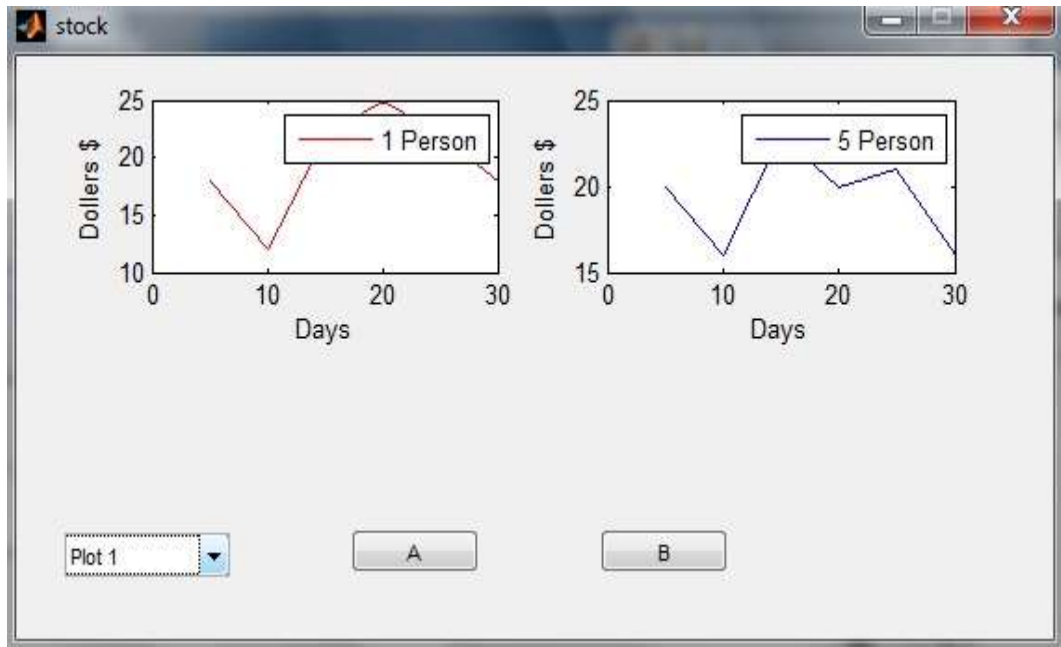


Figure 1: Stock Information

### 3.4. Herd Information

To capture the impact of herd consensus, different grades of herd agreements were used, i.e.

1. 6-0 (all the herd agree)
2. 5-1 (one dissenter)
3. 4-2 (relative ambivalence).



**Figure 2:** Herd Information

In this figure it is shown that 1 person from the group of 6 people selected A stock, and the remaining 5 persons from the group of 6 people have selected B stock.

### 3.5. Task Context and Schedule

The task was undertaken by 28 Rawalpindi residents (students and professionals) aged 18 to 48, including 19 males and 9 females, with varying degrees of economics and finance and relevant experiences. Participants were presented with the visual representation of simulated historical share price performance for 5 seconds (5s). Then, the choices made by the herd (as in Figure 3). Then participants chose one of the two stocks by pressing a button. The subjects' decision-times were collected.

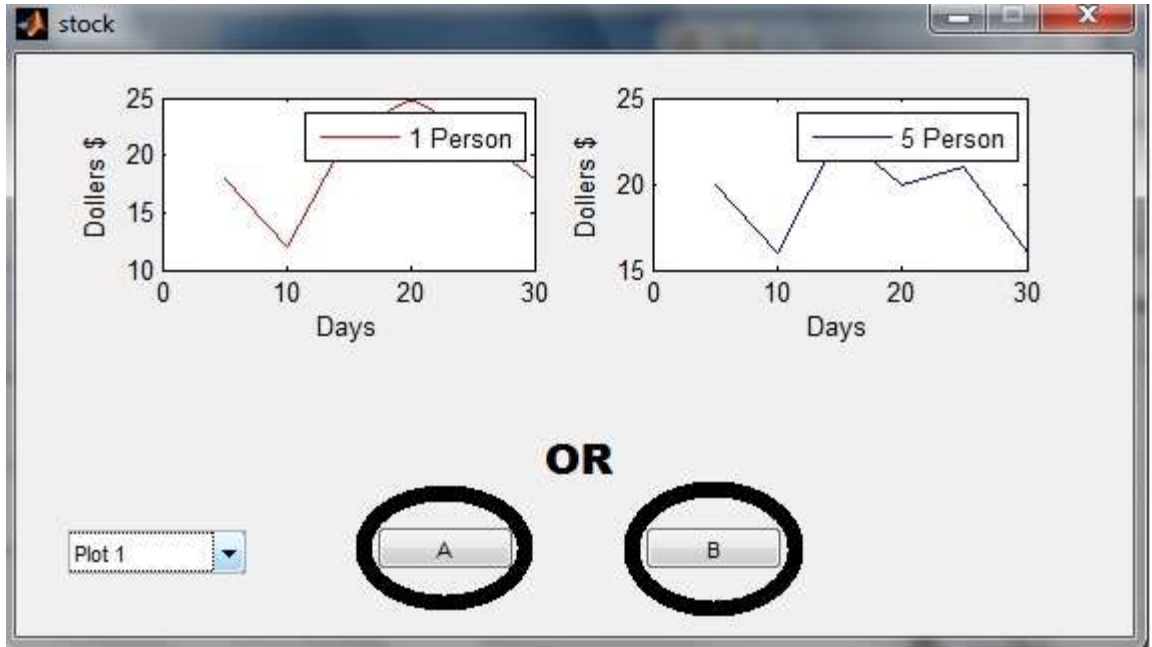


Figure 3: Stock Selection

Questionnaire related to personality's traits was also administered Online during this experiment from target population. Result of both Experimental Task and Questionnaire was gathered on same data sheet that will help to do the required comparison.

#### 4. Discussion

Considering all the inputs in MATLAB, data is processed and shown in the mentioned format. There were 30 slots to be answered by each subject which can be seen in the first column of the table. The next column shows the pattern of herd information which was given in each slot and the third column shows the response of the subject whether he/she goes for stock A or B by following the pattern or not and in how many seconds (numbers show the time in seconds).

To figure out whether PC1 is herding or not we have added the total number of slots where he/she go for herd and also the total number of slots where subjects go for stock against the herd information. In this table it is seen that the subject gone 25 times with herd and 5 times against the herd. So we can assume that subject selected the stocks because of herding behavior, as 25 times is higher than 15 (middle of 30).

As it is revealed that when a subject goes through the herding behavior, then our next aim is to find out that whether he/she rationally or irrationally approaches for herd information. For that

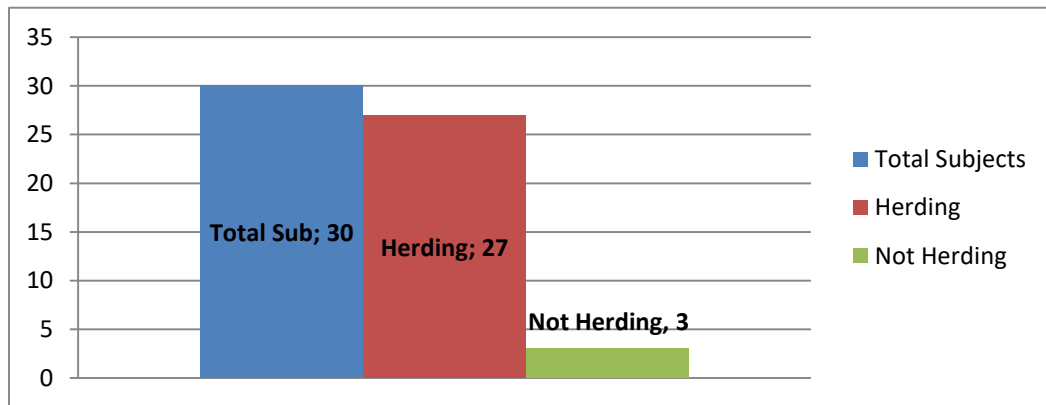
purpose, we'll take the median of the time of 25 slots where the subject has selected to go with the herd. Suppose the median is 7 seconds, then we will see how many number of slots have higher times than 7 seconds and how many have lower, respectively. Suppose that out of 25 slots, 16 slots have lower times than 7 seconds, and 8 slots have higher times than 7 seconds. Then we will assume that the subject is irrationally gone for herding. Although the personality characteristics of the subject were examined by the questionnaire.

**Table 1: Herding pattern**

	Herding pattern	PC 1	
		A	B
Slot 1	A0/B6		5
Slot 2	A4/B2	7	
Slot 3	A5/B1	6	
Slot 4	A2/B4	9	
Slot 5	A1/B5		6
Slot 6	A5/B1	7	
Slot 7	A2/B4	10	
Slot 8	A4/B2	7	
Slot 9	A1/B5		11
Slot 10	A5/B1	8	
Slot 11	A2/B4	5	
Slot 12	A6/B0	6	
Slot 13	A2/B4		8
Slot 14	A1/B5		7
Slot 15	A2/B4	10	
Slot 16	A6/B0	7	
Slot 17	A5/B1	9	
Slot 18	A1/B5		11
Slot 19	A0/B6		6
Slot 20	A5/B1	8	
Slot 21	A1/B5		9
Slot 22	A4/B2	12	
Slot 23	A2/B4		8
Slot 24	A5/B1	7	

Slot 25	A6/B0	4	
Slot 26	A1/B5	13	
Slot 27	A0/B6		8
Slot 28	A2/B4		10
Slot 29	A5/B1	9	
Slot 30	A4/B2	7	

#### 4.1 HERDING

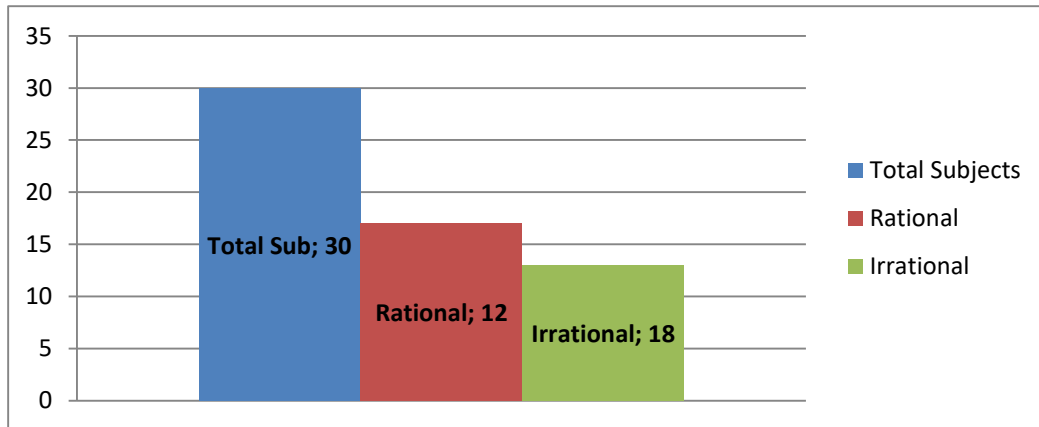


Herding		
Total subjects	30	
Herding	27	90%
Not Herding	3	10%

In hypothesis 1, it was postulated that investor’s financial/economic decision-making within the group is affected by Social information. Results indicated that most of the target population preferred to go with the herd’s option, which justified the intended hypothesis. It is quite visible in most common choices in our daily routine when we opt to buy something just because most of the others in the same market prefer that particular item. For example, after a detailed review through the internet, a person selects Mobile A to buy and sensitise that its features will fullfill his/her needs. However, on a visit to mobile market, he finds that most of the customers are buying Mobile B. So this changes his/her mind and buys Mobile B while ignoring all the information he/she reviewed about Mobile A. This kind of investor seems to go with the flow rather to prefer his own choices, which is also noted by (Olsen, 2000).

In past it was consistently shown by researchers that in case of financial decisions other than stable markets investors display a lack of self-confidence to go with their own decision and get influenced by other investors in unstable markets (Hilton, 2001). Contrary to that, Hwang and Salmon (2004) present a different approach and disagree to the assumption that herding characteristics are related to extreme market conditions. According to them, it can also be observed under normal market conditions.

#### 4.2. Rational/Irratational



#### **Rational/Irratational**

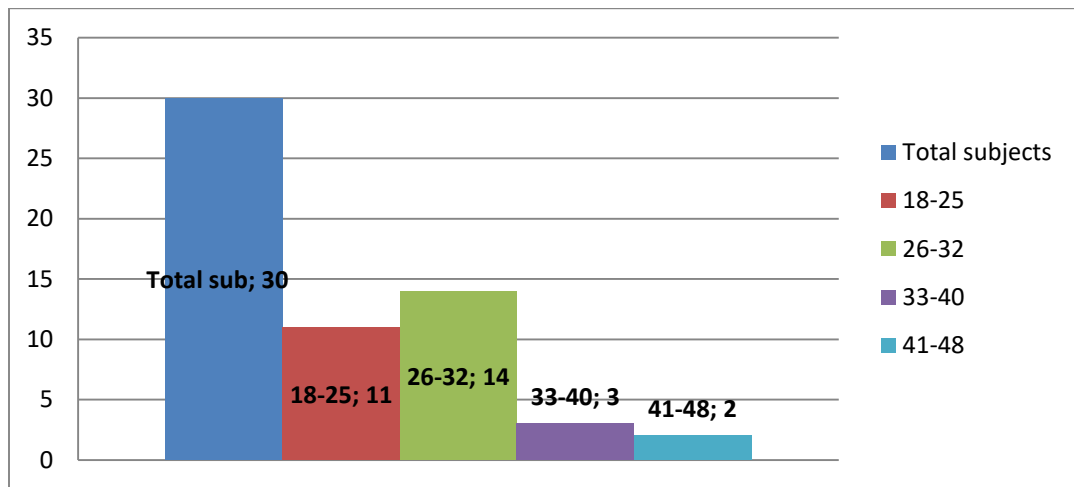
Total Subjects	30	
Rational	12	40%
Irrational	18	60%

Results showed that most of the target population practiced herding behavior. However, when subject audiences were examined to separate rational from irrational, 12 of them have rational decision making approach whereas 18 have irrational approach (40% and 60% respectively). In this regard, most of the population, whether they are rational or irrational, has opted to herd, but specifically, it is observed that 60% of the subjects are irrationally approaching, and 40% of subjects are rationally approaching. Generally in theories, it is revealed that people' decision-making is irrationally affected by the group information in unstable situation. That's why this ratio of 40-60 is genuinely justifiable in the Pakistani context, where instability is high. In second hypothesis, it was assumed that herding is a cognitive and deliberative approach. The rational approach in finance is subsumed by a broader approach, behavioral finance, where expected returns are determined by risk

and misevaluation (Hirshleifer, 2001). Significant price change is not essentially related to the appearance of information on economic variables but to a combined phenomenon such as crowd effects or herding behavior (Thaler, 1991).

In a study, authors indicated that independent decision-making across the market is like fiction. Many powerful market participants stress upon that decision taken by them get highly influenced by other market participants (Devenow & Welch, 1996). Therefore, herding appears in the capital markets as the tendency of a group of investors to buy (sell) certain stocks at the same time, compared to what would be expected if the investors were working independently (Lakonishok et al., 1992). In that sense, this factor can be extracted that rationality and irrationality financial decision-making has some different interpretations. Risk involves in financial decision-making are higher; therefore investors prefer to have choice that appeal them as most safe one which insures maximum profit or at least prevent loss. In this situation, it will be quite difficult to predict a person going with a herd going through a rational decision-making process or vice versa.

### 4.3. Age Group

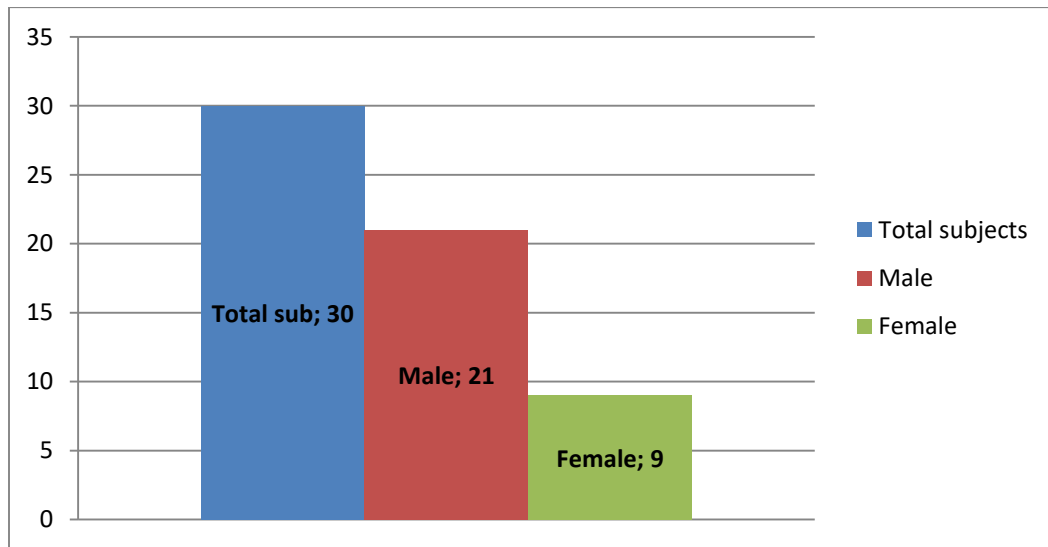


Age Group	Herding		Not Herding	
	Count	Percentage	Count	Percentage
Total subjects	30			
18-25	11	81.90%	18.20%	
26-32	14	92.90%	7.1	
33-40	3	100%	0%	
41-48	2	100%	0%	

It was also tested whether age differences amongst the target audience showed any variance in their preferences. A trend was observed where some of the respondents between 18 and 32 years have showed non herd behavior. This can be generalized as a common fact that young people have more curiosity and want to test their potential, so they are more risk-taking. Therefore, it could be one cause that some of the younger respondents opted for options that are not herd choices.

Lamont (1995) found that a forecaster’s age is positively associated with the absolute first difference between the forecast he made and the group mean. However, Graham (1999) did not find any significant evidence supporting this assumption. Overall, age difference did not prove a prominent factor that determines any impact on herd or not herd behavior. Some authors in the past also treated age diversity as a less job-related factor (Simons, Pelled, & Smith, 1999). However, age diversity may capture experiences and perspectives relevant to the workplace, and those experiences comprise a small portion of the total set of experiences and perspectives age diversity captures (Zenger & Lawrence, 1989).

**4.4. Gender**

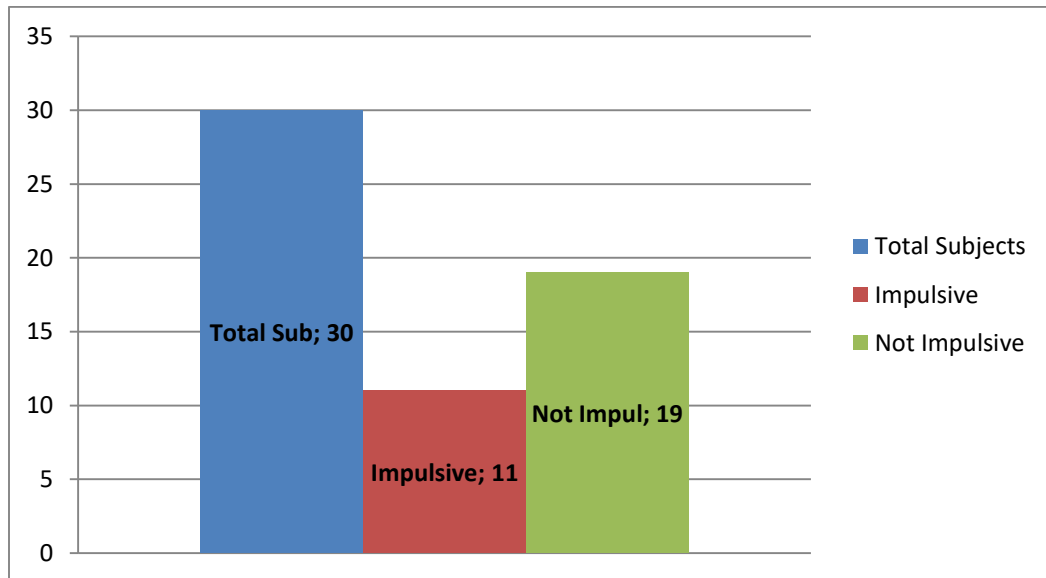


<b>Gender</b>			
		Herding	Not Herding
Total subjects	30		
Male	21	85.7	14.3
Female	9	100%	0%

It was noted that investment decision making has been dependent upon gender as male tend to choose more risky portfolios and trade more as compared to women (Barber & Odean, 1999). According to them, women's investment related decision showed lack of optimism and self-confidence and have negative perception about themselves which make them to refrain from their decision. Results also confirmed this trend as all of the female respondents choose to go with herd's decision and avoid taking any risk. Contrary to that some of the males go with their own decision instead of following herd.

Pakistan has culture with male dominance and mostly males have to take all the finance related decision whether it is to take day to day decisions at home or to run business for earning livelihood. Females have mostly to look after different household matters in the whole society and they have been refrained from financial matters either by their own will or by social pressure. In this regard they have less orientation to market settings which make them unconfident while making financial decisions. Similar results were shown after this experiment, where all female respondents tend to choose herd's choices instead of taking a risky decision.

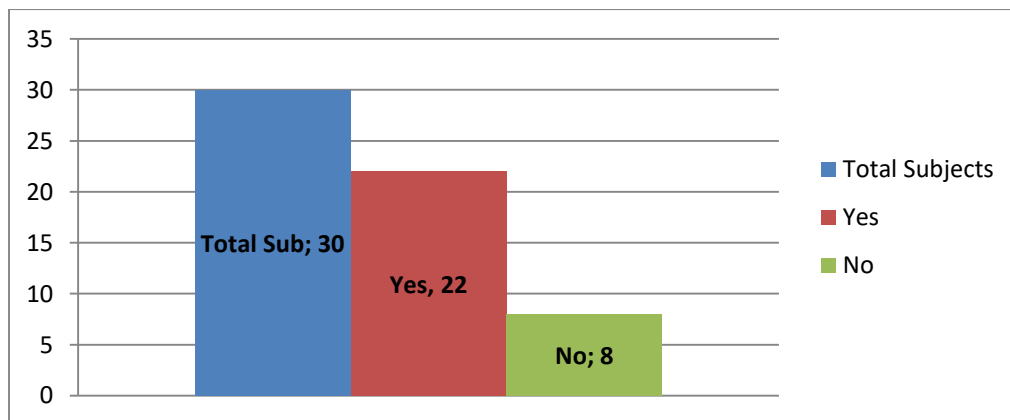
### 3.6. Impulsiveness



<b>Impulsiveness</b>			
		Herding	Not Herding
Total Subjects	30		
Impulsive	11	90.90%	9.10%
Not Impulsive	19	89.50%	10.50%

According to the results there was no difference shown by the respondents who are impulsive in nature and respondents who are not impulsive. One reason for this could be the simplicity of the task, where there is no real-time pressure of an actual market situation where respondents have to take decisions that may result in a profit or loss situation. As Dickman and Meyer (1988) argued that impulsive style of responding does not always bring negative consequences. There could be a situation where task simplicity under time pressure brings better performance from individuals categorized as more impulsive than those who are less impulsive. This could be the reason that there was no prominent differentiation found between decision-making trends of respondents having high on impulsivity against respondents with low on impulsivity. It can be determined here that impulsivity sometimes comes by default and does not necessarily always bring negative consequences. As a basic tool of survival, emotional impulses from the limbic system drive a desire among individuals to pursue signals from others in matters of knowledge and behavior and therefore to align their feelings and convictions with those of the group. The desire to belong to and be accepted by the group is compelling in intensely emotional social settings when it can overwhelm the higher brain functions (Prechter, 2010).

#### 4.5. Venturesomeness



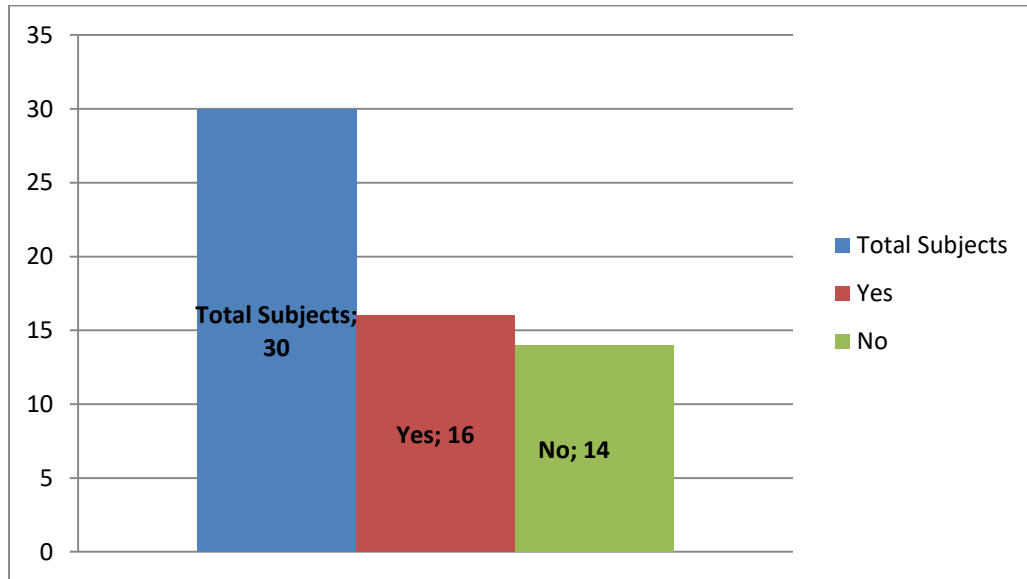
<b>Venturesomeness</b>			
		Herding	Not Herding
Total Subjects	30		
Yes	22	90.91%	9.09%
No	8	87.50%	12.50%

Results indicated that venturesomeness as a personality dimension does not show any impact on respondent's decisions to go with the herd or not. Out of 22 respondents with venturesomeness personalities, 91% chose to go with the herd, while only 9% chose to go with the option contrary to herd. Similarly, out of 8 respondents who scored low on venturesomeness, 88% opted to go with herd choices, while only 12% decided against herd information. This trend clearly showed that there is no difference between the respondent's financial decision-making behavior on the basis of venturesomeness as a personality trait when it comes to herding.

People having venturesomeness personality mostly seem to show risk taking behavior and go with options that brings adventure. However, this experiment brings a new dimension where respondents high on venturesomeness opted to go with safer options and showed herding behavior. This is due to the fact that in financial decision making and especially in a new situation where decision makers do not have prior experience there could be probability that they will opt to have options that seems safer. Same is the case here when respondents were given choices to go with the herd or to choose their own option; they preferred to go with the herd option, that appeared safer decision.

On the other hand, respondents who do not have venturesomeness personality they are mostly opted to go with the herd, which is in line with general traits associated with this kind of personality type. Risk-averse persons mostly prefer to take safer decisions, as in this case, it looks optimum to follow herd's decisions to get maximum financial benefit. Results showed that out of 8 respondents having less venturesome personality, 88% opted to go with the herd whereas only 12% took other options while taking decision.

#### 4.6. Empathy



Empathy			
	Herding	Not Herding	
Total Subjects	30		
Yes	16	100.00%	0.00%
No	14	78.57%	21.43%

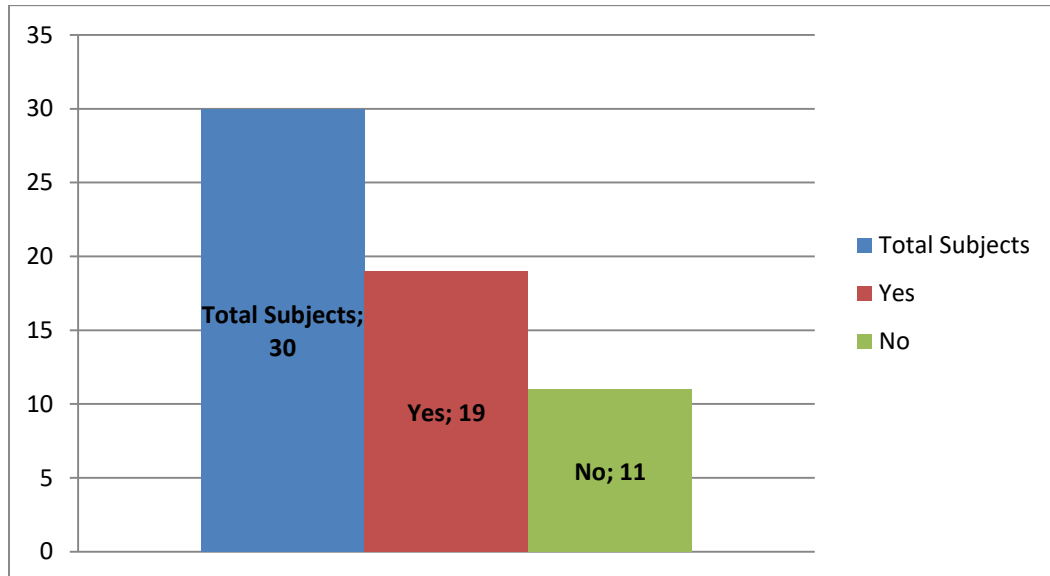
Results showed that all of the respondents characterized to have trait of empathy propagated herding behavior, and all of them chose to go with herd's options. On the other hand, some respondents who do not have empathy as part of their personality selected options contrary to the group. This can be concluded as people who have the capacity to place themselves in place of others are mostly likely to show herding behavior when it comes to financial decision making. Whereas, evidence has been found to assume that people low in capacity to put themselves in other's place avoid herding when it comes to making any kind of financial decision.

All of the 16 respondents having empathy as a personality trait followed the herd's choices. This result is aligned with general perception of empathy as a personality trait, according to which people with this trait feel for others and try to put them on other's place so as to understand their position. These kinds of people tend to develop a sense of sympathy with groups which affects their

decisions in accordance with group choices. Similarly in this experiment respondents having empathy as a personality trait opted to go with herd choices; this is in accordance with basic assumptions about this kind of personality.

There are 14 respondents who do not have empathy as part of their personality. Out of these 14 respondents, 21% made their own choices while making decisions. This also proved the assumptions about personalities not having empathy as a trait.

#### 4.7. Conformity



Conformity			
		Herding	Not Herding
Total Subjects	30		
Yes	19	100.00%	0.00%
No	11	72.72%	27.28%

Results indicated that 19 respondents showed a tendency to conform with the group norms, while 11 respondents do not have conformity as their personality trait. Out of 19 respondents who showed conformity with group norms, all of them also depicted herding behaviour. This is in accordance with the effects of conformity, where people conform strongly to social norms. In this

experiment, respondents were presented with some information about the group decisions in a particular financial scenario. Individuals who tend to conform with social norms also depicted the behavior of herding and opted to select options per herd's choices.

Whereas 11 of the total respondents did not show tendency to conform with group norms. Out of these 11 respondents, 27% opted to go against herd choices which confirms to some extent that individuals who do not tend to conform with group norm also avoid herding. However, there are respondents who do not have tendency to conform with group norms still they opted to follow herd's choices. This can be due to a financial decision making scenario where most of us want to take options that maximize profit or at least ensure to save us from loss. Individuals who do not tend to conform with group norms opted to herding because they want safer choices that bring desired outcomes.

### **5.1 Implications of the Study**

Like past studies, this study has proved herding as part of financial decision-making plays a vital role in financial decision maker's choices. It is very important that herding should be given weightage at different levels of decision-making process and decision-making authorities. Policymakers at organizational level incorporate herding as part of financial decisions that have both long term and short term implications. These policies should be transferred to managerial level where managers do have luxury to think about herd's choices while making routine financial decisions

### **5.2 Limitations and Recommendations**

Like this study where impact of personality traits have been studied on herding behaviour, in future researchers can study other variables those may have vital role in modeling herding behaviour. The focus should be on the applied side of herding behaviour that can give practitioners a clear direction while deciding to herd or not. In context of this study researchers in the future can remodel this experimental design to gather more precise data that can further help to analyze this relationship. For example, number of subjects can be increased that can give more diverse opinions, pictures can be used instead of numbers while presenting herd's information and there can be specified comparison based on information from different religious groups like muslims and non-muslims.

The findings may not be applicable to a wider variety of people because the study may have concentrated on a particular demographic or group of people. The study might have been carried out in a particular setting or context that didn't adequately represent the intricacies and variety of real-world financial decision-making settings. The participants who fill out surveys may not be totally honest or accurate in their responses, which could skew the statistics.

## 5. Conclusion

The Aim of this study was to analyze herding behaviour in the Pakistani context, as in the past, there was no such study that elaborated herding in the context of Pakistani culture. In this regard different personality traits were chosen to analyze their impact on herding behaviour. Studies in the past presented different opinions regarding herding behaviour where some of them tag herding as a Rational process, while others portray it as irrational. However, most of the researchers emphasized on the importance of herding behaviour in studying the performance of different financial markets.

Analysis of this study revealed that Herding exists as part of financial decision-making that has an impact on how different decision-makers act while taking financial decisions. Results of the study revealed an interesting fact where all of the respondents go for herding whether this act is rational or irrational. This result gave a new direction when taking financial decisions most people prefer to go with herd's choice, whether this choice comes after rational or irrational thinking. It has been observed that most of the people irrationally go with herd/group.

Another important aspect of this study was to analyze the role of personality traits in herding behaviour during financial decision-making. Study reveals mix result where some personality traits like empathy showed significant impact on respondent's choice to go with herd or not. Whereas some personality traits like venturesomeness do not have any impact on respondents' choice of herding. These results partially supported the assumption that personality traits do have an impact on financial decision maker's herding behaviour. The experimental design of this research study required specific IT skills to obtain relevant data that can help to the required analysis. In this regard it was quit difficult to find out an expert specifically having skills related MATLAB programing.

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