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IN-STORE VISUAL MERCHANDISING AND SHOPPER BEHAVIOUR: AN EMPIRICAL STUDY OF SHOPPERS AT SELECT RETAIL STORES IN THE CITY OF HYDERABAD

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ABSTRACT

Visual merchandising (VM) has an influence on retail consumer behaviour. In this study an attempt has been made to explore the specific relation between In-store Visual Merchandising variables (store atmospherics, store layout, shelf/merchandise display, signage and graphics and social factors) and shopper behaviour variables (purchase and repurchase intention, customer satisfaction, patronage and store loyalty). A structured questionnaire was prepared consisting of scales measuring the said variables on a 5-point Likert scale ranging from 5 (Strongly Agree) to 1 (Strongly Disagree). Complete responses were obtained from 100 respondents. The data was analysed in SPSS. Cronbach Alpha and inter item correlations were calculated for ascertaining the reliability of the scales. Correlation and regression were done to test the hypotheses of the study. Results show that Shelf/Merchandise display is a significant determinant of shopper behaviour followed by store atmosphere and signage and graphics. Incidentally, contribution of store layout and social factors to shopper behaviour is not statistically significant.

KEYWORDS

visual merchandising, shopper behaviour, store atmosphere, store layout, signage & graphics, shelf/merchandise display.

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INTRODUCTION

Indian retail sector is undergoing a sea change. With the relaxation of FDI policies many foreign retail firms have set up and are planning to set up their businesses in India. More and more new players are entering the sector thus increasing the intensity of competition in the sector. On the other side there has been a phenomenal change in the demographics of retail consumers or shoppers. They are more aware and knowledgeable and have raised the bar for the retailers vying for their share of wallet. Current day retailers are under tremendous pressure to attract to the store as many footfalls as possible and convert them into shoppers. Visual merchandising (VM) serves as an effective marketing tool for the retailers to increase their appeal to the shoppers. Effective Visual merchandising attracts more customers to the store, makes them stay longer, browse more and ultimately buy more. This study is undertaken to understand the association between In-store VM elements and shopper behaviour.

REVIEW OF LITERATURE

Visual Merchandising (VM) and Consumer/Shopper Behaviour

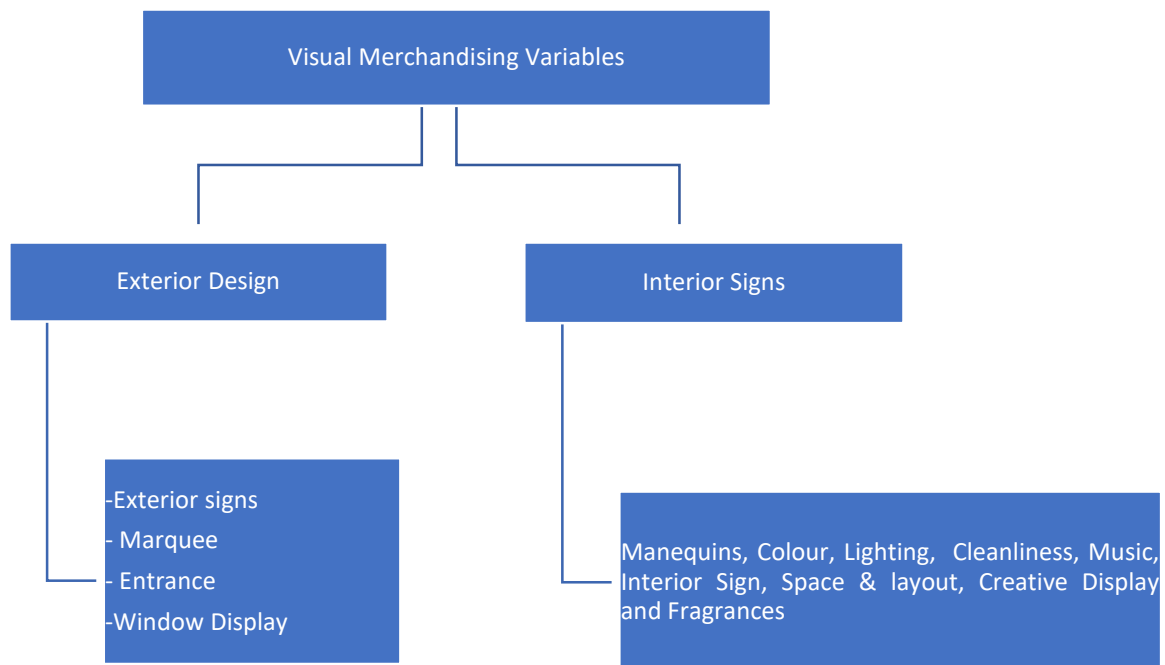
“Visual merchandising, briefly defined, is the presentation of a store and its merchandise in ways that will attract the attention of potential customers and motivate them to make purchases” (Diamond, 2007). Visual merchandising includes everything that is visible to the customer while approaching and entering a retail store. VM denotes display of products in a way so as to raise the interest and desire of retail consumers. It includes creation of window and floor displays using sample goods, fixtures, decorations, etc. (Newman & Cullen, 2007).

Kotler emphasises that buying behaviour study includes understanding how consumers select, buy and dispose of goods, services, ideas or experiences in order to satisfy their needs and wants (Kotler & Keller, 2006). Consumer behaviour is the method individual human beings follow in buying and using products and services for their need satisfaction (Khaniwale, 2015). While consumers are the users of a product, shoppers are the ones who do the actual buying for them. “Shopper has to solve a composite riddle consisting of products, brands, retail stores, their locations, and/or channel combinations which together satisfy a buyer’s needs” (Jones, 2013). Visual merchandising has a significant influence on buying behaviour (Arjun, 2014) (Tabassum & Khan, 2015) (Wanniachchi & Kumara, 2016). Consumer buying behaviour is directly linked with elements of Visual merchandising such as window display, cleanliness, store environment and signage (Kaur, 2013). Many researchers have established that Visual merchandising influences consumer impulse buying behaviour (Saini, 2015) (Md Wasiul Karim & Ulfy, 2020). The atmosphere in which a customer shops greatly influences his/her purchasing decision. A poor store layout, for instance, may cause psychic costs to the customer resulting in the customer not wanting to revisit the store as overall shopping pleasure is reduced (Baker, Parasuraman, Grewal, & Voss, 2002).

Elements of VM

VM has visual-sight, aural-hearing, olfactory-smell and tactile-touch dimensions (McGoldrick, 2002). Store front, store interior, store layout and interior display are the elements of VM (Marketing Essentials, 2012). Broadly, exterior design and interior signs are the two elements of VM with many sub-elements (Wanniachchi & Kumara, 2016).

FIGURE 1: ELEMENTS OF VISUAL MERCHANDISING



Source: Secondary data (Wanniachchi & Kumara, 2016)

Store atmospherics are the physical characteristics of retail space well under the control of the retailer which lure customers to come into the store. They are the “store’s physical characteristics that are used to develop the retail unit image and draw customers”. Retail store environment creates an ‘experience’ for the shoppers that affects their buying behaviour (Moye & Kincade, 2002). Music, colour, scent, floor design, cleanliness, decorations, and lighting are the important aspects of retail store atmospherics. A well-planned store layout yields optimum return on retail floor space. Grid layout, race track layout and free-form layout are the basic layout forms which retailers modify to suit their specific requirements. A planogram is a useful tool that helps create visual description of selling space, product display space, personnel space, checkout counters and customers. Layout and design of a retail store are aspects which retailer should pay attention to as they significantly affect the time consumers spend in the store (Donovan, Rossiter, Marcolyn, & Nesdale, 1994) and consumer purchase behaviour (Levy & Weitz, 2004). Shelf/Merchandise display should be visually appealing. Customers should have easy access to the displayed merchandise. Manner of display should create more cross selling opportunities for the retailer. Also changing displays will create interest in the same product for regular customers due to display novelty. Signage and graphics are elements of VM that bring about wonderful sales results for the retailer. Signage varies from a simple shelf tag to big boards giving directions to customers or giving company related information. Creative use of signage helps in customers seeking out slow moving and non-moving items in the retail store (Swoboda, 2007). Strategically placed signages in bold colour and font grab customers’ attention and increase the item’s prospects of further inspection by them (Keige, 2010). Despite the popularity of self-service format retailing, people still prefer service from retail store. Social factors – other customers and sales people (Daunt & Harris, 2012) play a crucial role in retail selling process. Customers look forward to feel-good experience while buying retail products and such feelings are delivered by the retail sales personnel (Tyreman & Walton, 1998). Interaction with salespeople will engage the shoppers in the store for longer time periods and thereby lead to purchase. (Zhang X. S., 2013). Sales people’s physical appearance and communication aspects like how they smile and greet people walking into a retail store have an effect on shopper experiences and any such poor experience will disappoint the customers and terminate the retail transaction.

Shopper behaviour

Purchases at a retail store are determined by its environment and the emotional state of the customer (Sherman & Smith, 1997). VM induces shoppers to take spontaneous/instant purchase decisions in the retail store (Kumar, 2018). Repurchase intention is the customer’s willingness to purchase from the same seller again. Shoppers’ emotional states like pleasure, arousal, enjoyment, etc influence both purchase and repurchase intentions (Hogg & Penz, 2008) (Sherman & Smith, 1997). VM promotes curiosity in merchandise, encourages buying and strengthens customer satisfaction (Marketing Essentials, 2012). Customer satisfaction has a strong positive relationship with store patronage (Terblanche, 2018). According to AMA (American Marketing Association), ‘patronage is the motive that drives a customer to a specific outlet/retailer/service provider’ and has two dimensions – store choice and frequency of visit (Pan & Zinkhan, 2006). Store loyalty is customers’ commitment to a particular firm (Oliver R., 1999) not being affected by influences to switch to other firms (Oliver R., 1997) and to repurchase again and again in future (Zhang J. B., 2008). A study done on shopper loyalty in Indian retail sector confirmed that customer satisfaction drives store loyalty and that satisfaction comes mainly from the store environment and customers’ perceived value. Perceived value is in turn influenced by product assortment offered by the retailer (Monica Grasso, 2018).

NEED/IMPORTANCE OF THE STUDY

Indian retail firms are now facing cut throat competition from domestic players as well as international players. The need to attract and make the retail store more appealing to the customers has become all the more imperative. Retail level promotions give impelling cues that strongly influence shopper behaviour. Visual merchandising is one such promotional tool in the hands of the retailers to persuade shoppers by influencing their senses at conscious and sub-conscious level. The current study brings to light the impact of visual merchandising on shopper behaviour through empirical analysis. Findings of the study provide important inputs to retailers in framing appropriate strategies for attracting the shoppers and retaining them for longer time in the retail stores.

STATEMENT OF THE PROBLEM

Secondary data analysis has led to these research questions - What are the important visual merchandising variables? What impact do they have on behaviour of shoppers at retail store? What is the degree of association between visual merchandising and shopper behaviour? Thus, the identified research problem is stated as follows:

“To what extent are visual merchandising and shopper behaviour associated with each other?”

OBJECTIVES OF THE STUDY

The objectives of the study are as per following:

1. Analyse the relationship that exists between In-store VM and shopper behaviour; &
2. Bring to light the extent of association between In-store VM and shopper behaviour.

HYPOTHESES OF THE STUDY

- H₀: There is no significant correlation between In-store VM and shopper behaviour.
- H₁: There is significant correlation between In-store VM and shopper behaviour.
- H₀: There is no significant impact of In-store VM on shopper behaviour.
- H₁: There is significant impact of In-store VM on shopper behaviour.

RESEARCH METHODOLOGY

For the purpose of the study a structured questionnaire was prepared based on several standardized scales. The scales have items that measure perception of retail customers about the chosen in-store VM variables - store atmospherics, store layout, shelf/merchandise display, signage and graphics and social factors and shopper behaviour variables – purchase and repurchase intention, customer satisfaction, patronage and store loyalty. Likert scale of 5-4-3-2-1 has been used with 5 denoting ‘Strongly Agree’ and 1 denoting ‘Strongly Disagree’. Out of 130 questionnaires administered at select retail outlets following convenience sampling technique, fully filled responses were obtained from 100 respondents. Others had to be discarded due to non-response.

DATA ANALYSIS

The data so obtained was analysed using SPSS. Respondents’ demographic profile and shopping profile are tabulated. Reliability of the scales is ascertained. For this purpose, Cronbach alpha and the descriptive statistics of the scales are calculated. Inter item correlations have been computed. For analysing the hypotheses set for the study correlation is computed and then regression analysis has been carried out. Results of the analyses are presented in the following section.

RESULTS AND DISCUSSION

Profile of 100 respondents who have fully answered the survey are presented below:

TABLE 1: RESPONDENTS’ DEMOGRAPHIC PROFILE

				Count
Gender	Male	Age	21-30	22
			31-40	3
			41-50	3
			Above 50	2
			Total	30
	Female	Age	21-30	42
			31-40	18
			41-50	7
			Above 50	3
			Total	70
Total		Age	21-30	64
			31-40	21
			41-50	10
			Above 50	5
			Total	100

Source: Primary data analysis

TABLE 2: RESPONDENTS’ SHOPPING PROFILE

		Bill/trip				Total Count
		Less than Rs. 3000 Count	Subtotal Count	Rs.3000 to Less than Rs. 5000 Count	Rs.5000 and above Count	
VisitFreq	Once in a month	14	14	7	4	25
	Less frequently than once in a month	25	25	18	11	54
	More frequently than once in a month	11	11	7	3	21
	Total	50	50	32	18	100

Source: Primary data analysis

The following table shows Reliability Analysis for the scales employed in this study.

TABLE 3: CRONBACH ALPHA AND DESCRIPTIVE STATISTICS OF SCALES USED FOR THE STUDY

Scale	Cronbach Alpha	Scale Statistics			
		Mean	Variance	Std. Deviation	N of Items
Store Atmospheric	.921	115.11	379.877	19.490	33
Store Layout	.898	39.58	66.933	8.181	11
Shelf/Merchandise Display	.897	30.97	30.332	5.507	8
Signage & Graphics	.702	14.79	7.925	2.815	4
Social Factors	.890	21.50	22.051	4.696	6
Purchase & Repurchase	.757	19.64	10.920	3.304	5
Customer Satisfaction	.929	23.87	17.973	4.239	6
Patronage	.824	12.03	4.696	2.167	3
Store Loyalty	.867	19.22	13.123	3.623	5

Source: Primary data analysis

It may be observed that all the scales yielded a Cronbach Alpha value of 0.7 or more which is considered 'Good' and 'Excellent'. Inter item correlations are a measure of consistency of different questions measuring the same construct. Inter item correlations among the in-store VM variables are presented in the following table.

TABLE 4: INTER ITEM CORRELATIONS OF IN-STORE VISUAL MERCHANDISING VARIABLES

			Correlations				
			StoreAtmosph here	StoreLayout	SignageAndG raphics	ShelfMerchan diseDisplay	SocialFactors
Spearman's rho	StoreAtmosphere	Correlation Coefficient	1.000	.651**	.573**	.534**	.455**
		Sig. (2-tailed)	.	.000	.000	.000	.000
		N	100	100	100	100	100
	StoreLayout	Correlation Coefficient	.651**	1.000	.549**	.695**	.579**
		Sig. (2-tailed)	.000	.	.000	.000	.000
		N	100	100	100	100	100
	SignageAndGraphics	Correlation Coefficient	.573**	.549**	1.000	.664**	.501**
		Sig. (2-tailed)	.000	.000	.	.000	.000
		N	100	100	100	100	100
	ShelfMerchandiseDisplay	Correlation Coefficient	.534**	.695**	.664**	1.000	.620**
		Sig. (2-tailed)	.000	.000	.000	.	.000
		N	100	100	100	100	100
	SocialFactors	Correlation Coefficient	.455**	.579**	.501**	.620**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.
		N	100	100	100	100	100

** Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data analysis

Inter item correlations among the Shopper Behaviour variables are presented in the following table.

TABLE 5: INTER ITEM CORRELATIONS OF SHOPPER BEHAVIOUR VARIABLES

			Correlations			
			PurchaseRepu rchase	StoreLoyalty	CustomerSati sfaction	Patronage
Spearman's rho	PurchaseRepurchase	Correlation Coefficient	1.000	.698**	.735**	.767**
		Sig. (2-tailed)	.	.000	.000	.000
		N	100	100	100	100
	StoreLoyalty	Correlation Coefficient	.698**	1.000	.806**	.674**
		Sig. (2-tailed)	.000	.	.000	.000
		N	100	100	100	100
	CustomerSatisfaction	Correlation Coefficient	.735**	.806**	1.000	.716**
		Sig. (2-tailed)	.000	.000	.	.000
		N	100	100	100	100
	Patronage	Correlation Coefficient	.767**	.674**	.716**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	100	100	100	100

** Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data analysis

It is observed from the above two tables that the inter item correlations of the study variables are significant. This establishes the reliability and consistency of the current research scales.

The following table shows correlation between in-store visual merchandising and shopper behaviour.

TABLE 6: CORRELATION BETWEEN IN-STORE VISUAL MERCHANDISING AND SHOPPER BEHAVIOUR

Correlations

			VM	ShopperBehaviour
Spearman's rho	VM	Correlation Coefficient	1.000	.660**
		Sig. (2-tailed)	.	.000
		N	100	100
	ShopperBehaviour	Correlation Coefficient	.660**	1.000
		Sig. (2-tailed)	.000	.
		N	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data analysis

Since the correlation is significant, *the hypothesis that there is significant correlation between In-store VM and shopper behaviour is accepted.*

Having established that there is relation between in-store VM and shopper behaviour, further analysis was done to understand the significant contribution of various in-store VM variables to shopper behaviour.

TABLE 7: REGRESSION ANALYSIS OF SHOPPER BEHAVIOUR AND IN-STORE VISUAL MERCHANDISING VARIABLES

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.812 ^a	.660	.642	.38377		

a. Predictors: (Constant), SocialFactors, SignageAndGraphics, StoreLayout, StoreAtmosphere, ShelfMerchandiseDisplay

ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.860	5	5.372	36.475	.000 ^b
	Residual	13.844	94	.147		
	Total	40.704	99			

a. Dependent Variable: ShopperBehaviour
 b. Predictors: (Constant), SocialFactors, SignageAndGraphics, StoreLayout, StoreAtmosphere, ShelfMerchandiseDisplay

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.647	.260		2.487	.015
	StoreAtmosphere	.212	.093	.195	2.291	.024
	StoreLayout	.044	.082	.051	.542	.589
	SignageAndGraphics	.165	.079	.181	2.093	.039
	ShelfMerchandiseDisplay	.496	.094	.533	5.263	.000
	SocialFactors	-.040	.062	-.049	-.646	.520

a. Dependent Variable: ShopperBehaviour

Source: Primary data analysis

R-squared value of 0.66 is generally considered a 'Moderate effect size' (Moore & Flinger, 2013). It is evident from the ANOVA table (p < 0.05) that the group of independent variables reliably predict the dependent variable. Hence, *the hypothesis that there is significant impact of In-store VM on shopper behaviour is accepted.* p value is less than 0.05 for three variables – store atmosphere, signage and graphics and shelf/merchandise display. Hence, these three variables significantly predict the outcome variable. Shelf/Merchandise display is a significant determinant (.533) followed by store atmosphere (.195) and signage and graphics (.181). The other two variables store layout and social factors show a p value of more than 0.05. Store layout (0.082) and social factors (-0.49) do not make statistically significant contribution to the dependent variable.

FINDINGS

Findings of primary data analysis are summarised below:

Majority of the respondents of the current study are female. Majority of them belong to the age group of 21-30 years. All the scales used in the survey instrument have Cronbach Alpha value of 0.7 or more. Inter item correlations of the items used in the scales are significant. There is significant correlation between In-store VM and shopper behaviour. There is significant impact of In-store VM on shopper behaviour. Shelf/Merchandise display, store atmosphere and signage and graphics are significant predictors of shopper behaviour while store layout and social factors do not have a significant impact on shopper behaviour.

CONCLUSION

Empirical results of the current study emphasized yet again, that visual merchandising elements are significant determinants of shopper behaviour. Shelf/merchandise display relates to location and placement of items in a retail store. Given the fact that majority of the purchase decisions happen at the point of purchase (East & Williamson, 2003)(Clark, 2008), the importance of shelf/merchandise display cannot be over emphasized. Efficient merchandise displays engage the customers and make them more involved in the shopping experience. Store atmospherics include aspects related to music, colour, lighting, decorations and scent. All these aspects influence emotional state of the retail customers (Litchtle & Plichon, 2005). With customers increasingly seeking sensory gratification while shopping, atmospheric factors are gaining prominence in retailers' endeavour to increase customer appeal. Signage and graphics increase visual attention (Jesper Clement & Forsberg, 2015). Well displayed signage affects consumer spending behaviour (The Importance of Good Signage in a Retail Environment, 2017).

RECOMMENDATIONS/SUGGESTIONS

Based on the outcomes of the current study the following recommendations are made for improving the effectiveness of retail businesses:

Arrangement and display of merchandise in retail shelves calls for special attention of the retailers. There is no one correct or incorrect manner of merchandise display that works all the time for all the shoppers. Retailers need to choose time, occasion and customer specific displays after analysing the effect of various ways of merchandise display. Retailers will benefit immensely by focusing on store atmospheric factors such as music, lighting, decorations, fragrance that create the right ambience conducive to shopping. Shoppers will then spend a lot of time in the store which increases the likelihood of purchases. Signage and graphics at the retail store level can be deployed in an attractive way to influence the shoppers in favour of purchasing products which they might otherwise skip.

SCOPE FOR FURTHER RESEARCH

Extant review of literature shows that store layout and social factors influence retail consumer behaviour. But results of current study indicate that these two variables do not make any statistically significant contributions to shopper behaviour. It is recommended that further research be done specific to these variables to confirm established theory.

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LEGAL DIMENSION OF CROWDFUNDING PLATFORMS - A CROSS COUNTRY PERSPECTIVE WITH SPECIAL FOCUS ON BRICS NATIONS

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ABSTRACT

Even in earlier days, when the internet was not so popular, crowdfunding was practiced in India for the construction of churches, temples and other places of common interest. However, crowdfunding in the present state is of recent origin. Since the year 2014, crowdfunding with the help of internet platforms has become popular in India. In order to avoid the abuse of small investors who are risk-averse and do not have much expertise and experience in investing, equity crowdfunding has been made illegal in India by SEBI. For the study, seven crowdfunding platforms were selected based on information availability, size, locational presence and the type of crowd. A few of the factors that impact the success or failure of crowdfunded projects are the social media presence of the seeker/creator, the friends and family support for the seeker, the demographics, etc. In the effectiveness of a campaign, the mindset of the supporters often plays a crucial role. Different sites for crowdfunding have distinct project criteria and emphasis on various industries. Crowdfunding has been carried out for various reasons, such as raising funds for cancers or rare diseases, supporting individuals in the event of disasters, supporting an idea, helping to execute initiatives, etc. Also, the techniques by which we can initiate a campaign on different crowdfunding sites also have been discussed in this project. We have also studied the legal aspects of crowdfunding in the BRICS Nations i.e., Brazil, Russia, India, China and South Africa and made a comparative study of it.

KEYWORDS

crowdfunding, campaign, backers, creators, seekers.

JEL CODES

D53, G11, G23.

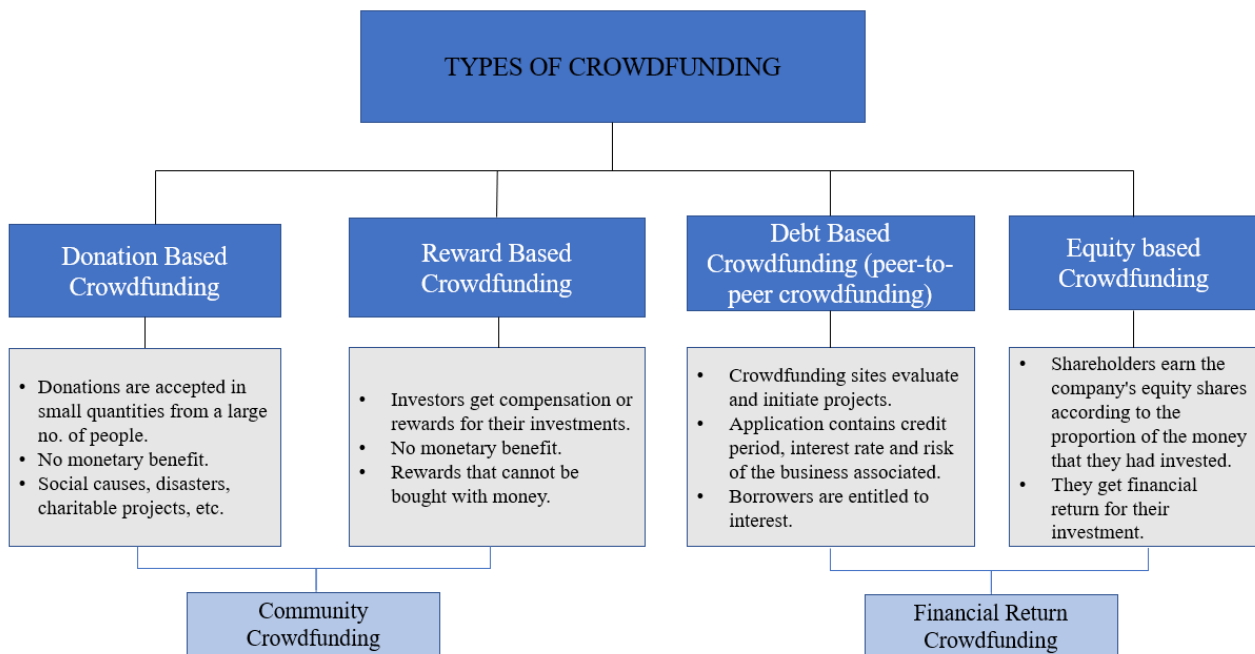
1. INTRODUCTION

Crowdfunding is a method of raising money, awareness and support for a project from people with the aid of smartphones, internet and other devices that are connected to the internet. It helps the individuals in bringing their ideas into reality with the power of the crowd. A crowd can be a large number of individuals gathered in a single place, and in this case, the place is Internet. Crowdfunding connects the Crowd (which means the supporters to the projects) directly to those who need funds with the service of an online platform.

Few terms to be familiar with, connected to crowdfunding:

1. Campaign: It is an organised course of action in order to achieve a goal. It is a finite work with a finite and clear goal that is expected or desired to come into reality.
2. Seeker: It can be an individual, group of people who are like-minded, a corporate or an NGO who is working behind a project that they want to establish.
3. Funding goal/ Target: It is the amount that the Seeker targets to raise with the help of a crowdfunding platform to be able to complete the project in a timely and adherent manner.
4. Rewards: In most instances the Seeker or Creator of the project shares a part of the project with the contributor or the supporter community. The rewards would be unique incentives for the supporters that they could not buy otherwise. It could be VIP passes for the premiers of the movie that they supported, sharing the stage with the amateur dance academy at their first mega hit, or sending personalized merchandise etc.
5. Contributor/ Backer: It can be an individual, a group of like-minded people, a corporate or an NGO who pledges money or support to the Seeker to get their project off the ground and bring it to reality.

CHART 1



2. MOTIVATION FOR THE STUDY

Crowdfunding is a collaborative initiative of individuals who network for a cause or a business idea and invest collectively. This is somewhat close to the conventional notion of charity or social cooperation, except here it is done with the aim of gaining some return, either monetary or intangible, as opposed to funding. Modern-day crowdfunding is synonymous with the internet and the use of social media for fundraising. Crowdfunding in India is still in its nascent stage, but the potential is incredibly strong. The type of funding for entrepreneurial projects is still less known, although donation-based crowdfunding has become very popular. There is very less data available regarding the crowdfunded projects in India. There is no proper database or Statistics available for the students and researchers to use for their study.

3. REVIEW OF LITERATURE

G.Usha (2018) in her research explains the meaning, the different forms of crowdfunding suitable for startups. In this paper, the researcher also analysed the merits and cautions to be taken and risks involved in crowd funding. This paper discusses the prominence of crowd funding as a mode of finance for startups. It studies how different forms of crowdfunding provide new ways to fund the startups in the various stages of their development. The selection criteria of the form of crowdfunding by startups who are seeking capital is also analysed. It also studies the extent to which the startups are succeeding in attracting Indian investors. R. Vijayakumar and Dr. Ramakrishnan (2020) in their article has identified the various styles and models of crowdfunding. The other issues they discussed were the drawbacks of crowdfunding and the lists of India's top crowdfunding platforms and crowdfunding websites. They have also explained about the crowdfunding participants and the crowdfunding platforms used. According to Bénédicte Couffinal (2014), crowdfunding is the result of mainly three variables namely: The advent of the internet and Web: Smartphones, social media, new technologies, etc. play a crucial role in the success of crowdfunding, which is a consequence of financial crisis.

Some of the reasons for the motivation of Crowdfunders are: first, it is often to help a friend, family or acquaintance to achieve a project which is the main motivation. Alexandra Moritz and Joern Hendrich Block (2016) in their paper provides an overview of crowdfunding literature, categorized in terms of the main players (capital seekers, suppliers of capital, and intermediaries), and raises critical research questions for future research. Their research relied on a keyword-based search using Google Scholar and several library catalogues (e.g. local and international library catalogues and electronic journal catalogues). Dr. Hethal Jhaveri and Prof. Anjali Choski (2014) selected Indian online crowdfunding platforms (CFPs), their focus area, fund raising methods, and their revenue models in their paper studies. The research paper mentions that the modern-day crowdfunding uses internet and social media for fundraising and that even though in India this is in an initial stage it has high potential. Their research focused mainly on the fundraising of initiatives based either on social issues or on innovation. Ethan Mollick (2013) in his paper provides an overview of the empirical research that has been done in the field of crowdfunding. The article indicates that crowdfunding ventures typically succeed or fail by significant amounts at narrow margins. The researcher has not used hypothesis testing but has examined the key issues around crowdfunding from entrepreneurship perspective and found that the success of crowdfunding activities and personal networks and the underlying quality of projects are related. Henry Saueremann et al (2019) use their research to provide insights into the creators who pursue funding, the different projects for which they seek funding, and the campaigns themselves. They also discuss the relationship between these characteristics and the effectiveness of fundraising. The results of their study include the variations between crowdfunding and conventional mechanisms of funding. They also found that as compared to senior scientists, students and junior investigators have more chances of succeeding. Similarly, women have greater rates of success than men. Dr. Ram Singh et al (2019) in their article gives us an overview about Crowdfunding in India. The main aim of their study was to find out the difficulties and problems faced by it in the Indian market and the risk associated with the company itself. This study also illustrates the value of making SEBI control these constraints and educate the ignorant individuals. Prinsha K (2016) in her research studies the Systematic risks and also mentions that the SEBI's position in crowdfunding is limited to the identification of the Crowd funding portals, supervision and regulation of the Crowd funding sector in India, with no role in the screening of the issuing companies' Private Placement Offer letter, issuance of guidelines/circular with regard to information needed. She also studies about Crowd Funding and its Implications in India. She explains about the types of Crowdfunding, key risks, SEBI's proposal and Indian experience of crowdfunding. Abhrajit Sarkar (2016) in his research, studies the issues and challenges of crowdfunding and its risks and acceptance in the Indian environment. This is a descriptive study using secondary data from various research papers, websites and journals. This paper also studies the views of SEBI on crowdfunding in India along with the guidelines and regulations imposed by it. The main objectives of the study were to analyse the Indian scenario about crowd funding, the drivers and key factors of crowdfunding, need for crowdfunding, risks involved in crowdfunding and the merits and demerits of crowdfunding. Carla Martinez Climent et al (2019) researched the viability of crowdfunded by examining the 53 documents yielded by the bibliometric search. They researched the relationship between the sustainability orientation of crowdfunding and crowdfunded projects by reviewing the various aspects of publications and articles, etc. They noticed that some authors asserted that crowdfunding can reshape the financial and energy system with respect to the sustainability orientation studied in the 53 articles, while others believed that crowdfunding contributes to allowing everyone to enjoy mutual goods. They also noticed that sustainability orientation, also with co-utility, was connected to social innovation by appropriate technology. Alexa Bockel et al (2020) in their paper systematically reviews the literature associated with the relation between crowdfunding and sustainability. The degree to which research

focused on crowdfunding and sustainable development was examined by them. The results of their research have shown that the relevance given and the various aspects of research and actual practice are misbalanced. They identified that the post-funding stage of crowdfunding as well as environment-oriented projects have a research void.

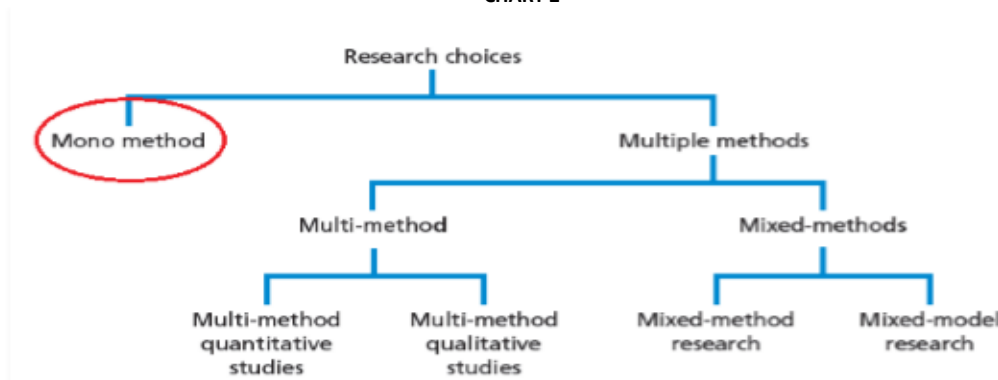
Crowdfunding is a financing process that has recently become common in India. The definition of crowdfunding still needs clarity and understanding. It is important to research the various aspects of crowdfunding, its models, and which crowdfunding approach is ideal for certain types of companies. A vast subject that can be discussed is the legal implications of crowdfunding in various nations. A topic yet to be discovered is a comparison or an overview of the legal aspects of crowdfunding. Unfamiliarity with this sector is more concrete as there is minimal Indian academic work although there is large U.S. literature and. There are, however, a large number of institutional or specialized websites in India whose information is accurate and provides a detailed understanding of the subject matter and reliable statistics.

4. METHODOLOGY

This study is intended to find the key players and crowdfunding mechanism in India and understand crowdfunding’s modus operandi. It also attempts to explore the financing opportunities available in India for MSME’s under crowdfunding and examine the different crowdfunding regulations in different countries, with a specific emphasis on the BRICS Nations. Exploratory study is used in order to find out “what is happening; to seek new insights; to ask questions and to assess phenomena in a new light” according to Robson (2002) cited by Saunders et al (2019). The exploratory study is primarily used to understand and know the motivations of the actors studied, but also the psychological mechanisms of their behaviour. To carry out an exploratory study there are three ways of conducting it; a search of the literature, interviewing “experts” about the subject or conducting focus group interviews in accordance with Saunders et al (2019). To meet the research objectives, secondary data that was available was used for the literature review. With this data, the concept of crowdfunding and its main characteristics were explained. Due to the lack of time for the conduct of the research, primary data through interviews were not used.

- a) **Population:** In order to study Indian Online Crowd Funding Platforms, seven fundraising websites were selected on the basis of availability of information, scale, locational presence and, the type of crowd.
- b) **Period of study:** 2014-present
- c) **Type of data:** Secondary data that can be found with the help of literature review, Books, Organisations official websites, Indian crowdfunding platforms, Journals, Newspapers articles, articles, etc.
- d) **Sampling technique:** Non-Probability Sampling Technique- Self Selection Sampling. The sample was selected according to the Availability of information, Scale, Locational presence and, the type of crowd.
- e) **Sample size:** Seven fundraising websites
- f) **Source of data:** Literature review, Books, Organisations official websites, Indian crowdfunding platforms, Journals, Newspapers articles, articles, etc.

CHART 2



Research choice: Mono Method.

Mono method

Mono methods refer to the technique of collection and analysis of data from primary as well as secondary research. Mono-method qualitative study: Mono-method qualitative study “is predominantly used as a synonym for any data collection technique (such as an interview) or data analysis procedure (such as categorizing data) that generates or use non-numerical data”. Saunders et al (2019). This type of method is used in order to build a theory as the inductive approach. The data that has been collected from the secondary sources have been analyzed in non-digital way (qualitative study).

TABLE 1: TABLE SHOWING THE DIFFERENCES IN THE CROWDFUNDING PLATFORMS - PART A

Crowd-funding Platform	Crowdfunding Specialization	Fees	Penalty Fee	Fundraiser Approval	Important to know
Ketto	Disaster Relief, Children fund, Social Work, Education, Community Development.	No charges	None	2 minutes	<ul style="list-style-type: none"> Founded on August 15th 2012 Specialised in charity work Backed by Bollywood celebrities Domestic as well as international platform
Wishberry	Social as well as creative projects, films, documentaries, music, food, technology, theatre & other categories.	2499 INR- 5,999 INR Non-Refundable Fee + 9.5% Commission + 2-4% Platform Fee	None	48 Hours	<ul style="list-style-type: none"> Founded in 2009 Most experienced platform for funding creative projects All or nothing policy (mandatory to raise the entire goal amount) Upfront costs during campaign set-up
Catapooolt	Media & entertainment - movies, books, films & Start-ups	15% of the total funds raised	a fixed 10%+18% of 10% (GST) as platform fees	Not specified	<p>Founded in 2010 Soft launch April 2012</p> <p>a) It is the world 's first Crowdfunding Platform with three tier reward systems - Rewards shared by the creators, Rewards by Catapooolt - gift vouchers, membership kit, etc. - tying up with brands like CCD. Dominos etc. Rewards for sharing on social media websites by Catapooolt.</p> <p>b) The team approval or rejection of the projects are done in just 48 hours</p>
Impact-Guru	Funding for Healthcare, Disaster Relief & NGO	Self-Driven -0% Platform Fee Assisted- 5% Platform fee Collaborate- 8% Platform fee	None	5 minutes	<p>Founded in 2014</p> <ul style="list-style-type: none"> Free Sign Up Fastest fundraising for medical causes <p>Only platform with tech innovative features like a. Story Bot to create automated crowdfunding appeal b. Instant Video Maker for immediate video appeal</p> <p>Offers the sole Android and IOS app for campaigners in India Further marketing and promotional support Broad social media base Excellent client service-personal assistance manager & crowdfunding specialist for technical advice 165+ countries impacted</p>
Crowdera	Social Causes	Not easy to understand	None	in 24 Hours	<ul style="list-style-type: none"> Founded in 2014 Supports social impact and innovation projects Offers flexible goals and timelines Complicated pricing policies and packages
Fuel Dream	Creative Ideas - Education & Innovation	0-3000 INR Non-refundable fee +4-9% Contract Charge + 3% Gateway Fee	None	Not Specified	<ul style="list-style-type: none"> Founded in 2015 For Innovative Ideas/Innovation Higher cost for flexible crowdfunding (keep what you raise) Managed over 260 campaigns
Dream Wallets	Creative & Personal Causes	5-9% Platform Fee	3-6% if goal amount is not achieved	Less than an hour to in 3 Days	<ul style="list-style-type: none"> Founded in 2015 Specializes in creative projects related to media and entertainment

TABLE 2: TABLE SHOWING THE DIFFERENCES IN THE CROWDFUNDING PLATFORMS - PART B

Crowdfunding Platform	Region of operation	Contribution	Minimum fund raising	Duration of Funds	No. of Contributors	Total Funds Raised
Ketto	Domestic as well as international platform	Min. Rs. 100 – max. any amount	Rs. 1000	Depends on project	55 lakhs+	1100+ Crores INR
Wishberry	Both	Min. Rs 50 – max. Rs.50,000	100% of target amount else refunded back.	Maximum of 100 days.	7250+	14+ Crore INR
Catapooolt	Global with special focus on Asia	Min. Rs.500 – max. any amount	Min. collection should be 80% of the requirements	Default 30 days, but flexible Maximum 90 days	1000+	1100+ Crores INR
ImpactGuru	165+ countries impacted	Depends on project	No limit to the amount of funds made	Depends on project	10,00,000+	1500+ Crore INR
Crowdera	Global	Depends on project	Not Specified	Depends on project	Data not available	Data Not Available
Fuel Dream	India, Africa, South East Asia	Minimum if Rs. 100 and maximum of Rs. 5 lakhs	Not Specified	Depends on project	1000+	17+ Crore INR
Dream Wallets	India	Depends on project	Not Specified	Maximum of 90 days. More than 90 days in exceptional cases.	100+	Data Not Available

TABLE 3: TABLE SHOWING A COMPREHENSIVE COMPARISON OF THE BRICS NATIONS

Country	Types of crowdfunding	Legality pertaining equity crowdfunding	Major Provisions in this field	Regulatory Bodies	Most popular Crowdfunding Platforms
Brazil	Donation based Rewards based Lending based Equity based	Equity based crowdfunding is legal with certain limitations.	Investment Crowdfunding Regulation (Regulation 588)	Securities and Exchange Commission (CVM) Regulation.	Catarse, Kickante
Russia	Reward based Equity based Debt based Donation based	There are specific and well-defined regulations on how equity crowdfunding can be done.	Federal Law No. 259-FZ (Law on raising capital)	Government	Boomstarter, Planeta
India	Donation based Reward based Peer-to-Peer Lending or Debt Crowdfunding	<u>Illegal</u> for common man but can be done by Qualified Institutional Buyers (QIBs), Eligible Retail Investors (ERIs) High Net worth Individuals (HNIs), Companies, which fulfil the prescribed qualifications	SEBI guidelines	Reserve Bank of India (peer-to-peer lending), Securities Exchange Board of India (SEBI)	Ketto, Catapoolt, Milaap
China	Donation based Reward based	There is no clear-cut regulation or regulatory body for equity crowdfunding in China. <i>Public offering equity crowdfunding- illegal</i> <i>Non-public equity financing through the Internet is not open to the general public</i> <i>Private Offering</i>	Securities Law of China	Chinese Government, China Securities Regulatory Commission (CSRC)	Taobao (from Alibaba), JD, Xiaomi
South Africa	Loan based Investment based Rewards based Donation based	Crowdfunding is not explicitly regulated in South Africa.	Existing provisions: Banks Act 31, Companies Act 71, Collective Investment schemes Control Act 45, Financial Advisory and Intermediary services Act 37, Financial markets Act 19, National Credit Regulation Act 34 of 2005, etc.	Financial Services Board (FSB)	<ul style="list-style-type: none"> ● Uprise. Africa (Equity Based), ● THE PEOPLE'S FUND (Royalty based), ● Thundafund (Rewards based), ● Livestock Wealth (Equity based)

5. RESULTS AND DISCUSSIONS

Crowdfunding platforms are specialised for various purposes like disaster management, treatment of illnesses, setting up a new business, bringing an idea into reality, etc. and each of the crowdfunding platforms have its own similarities as well as its uniqueness. The support offered by the crowdfunding platforms vary and therefore, a comparison should be made with the priorities in mind before finalising on which platform to use. Ketto charges no fees whereas the other platforms charge the fees under different criterions. Ketto, Wishberry, ImpactGuru, Crowdera and Fuel A Dream do not charge any penalty fee in the event of not getting the required fund for the project whereas the other platforms have their own schemes of charging a penalty. The time for fundraiser approval too varies from a few minutes to a few hours or even days depending on the platform used. The different crowdfunding platforms have started operating in India from 2009 onwards. However, the popular platforms used for crowdfunding have changed over time and the platforms too have been evolving with the evolving needs. The region of operation also is different with different crowdfunding platforms. However, the platforms that were chosen for the study were based in India and operated only in India or included other places too. However, it was noticed that most of the platforms allowed funding from abroad too. Ketto is the only one among the platform studied that does fundraising for social causes with the help of publicity from celebrities. All the other platforms focus on innovation and creations as their areas of focus. All of the CFPs except Ketto follow a reward-based model of Crowdfunding, Ketto follows a donation-based model. Ketto is one among the only one platform which has received a foreign grant. Wishberry is the CFP platform that has the longest duration of funding and also has the greatest number of initiators and projects. This could be because it allows initiators to run funding for a longer period as compared to others, and due to this Wishberry also has the largest pool of contributors. Catapoolt is the only Crowdfunding Platform which has focused on both domestic and foreign Crowdfunding projects, while the rest of the platforms are domestically oriented. Even though the basic pattern is the same, the methods of launching a campaign have their own variations. It has been noticed that each Crowdfunding Platform is unique in itself, as well as each project. The Crowdfunding Platform provides support to the initiator in terms of marketing the concept, approaching the crowd and offering advisory services with the built-in focus group and intent. Whereas each project within the spheres of the Crowdfunding Platform, determines its aim, fund target, timeframe and rewards, but the initiator is the ultimate liability.

6. COMPARISON OF THE REGULATIONS BETWEEN THE BRICS NATIONS

BRAZIL

Reward based crowdfunding and Donation based crowdfunding is the most popular forms of crowdfunding. Project leaders, artists and entrepreneurs are the major people who involve themselves in crowdfunding. The National Monetary Council (CMN), the Central Bank of Brazil (BCB), Securities and Exchange Commission (CVM) Regulations are the institutions that are responsible for the regulations and the smooth functioning of financial transactions. The regulations of the CVM expressly avoid the peer-to-peer loans. It is responsible in ensuring that issuer has complied with and offering the relevant regulatory specifications for public offers (limited to R\$ 5 million) to be made through an electronic platform operated by a company duly incorporated in Brazil and registered with the CVM. Even though equity crowdfunding is not illegal in Brazil, its volume of transactions is still limited. CVM Instruction 400, passed in 2013 governs the country's public offerings. However, there are some exemptions to this law which allows SMEs (defined as firms with annual turnover of 3.6 million real, or \$1 million) to waive the criteria for registration.

RUSSIA

In Russia, there is clear-cut rules regarding crowdfunding through investment platforms through the internet. The rule has defined investment platforms, investors, methods of investment, restrictions on attracting investments, investment disclosure requirements, etc. There are proper rules in place for Equity crowdfunding as well as the other forms of crowdfunding. However, these laws focus on protecting retail investors rather than simplifying the investment process and eliminating barriers. They limit the potential for crowdfunding as an alternative to traditional sources of capital for businesses. The law on raising Capital, the Federal Law no. 258-FZ, etc. are the major laws that govern crowdfunding in Russia.

INDIA

Equity-based crowdfunding is illegal according to the rules in India, whereas peer-to-peer lending is controlled by the RBI. Community crowdfunding, which involves crowdfunding based on donations and rewards, is legal and is very common for raising funds for social causes. (Contributors, 2018). The Securities and Exchange Board of India (SEBI) invented a distinct form of Security-based Crowdfunding in the Consultation Paper on Crowdfunding in India (SEBI Consultation Paper), viz. Fund based Crowdfunding (FbC). Under the FbC model, the funds of accredited investors registered with a recognized platform [Qualified Institutional Buyers (QIBs), Businesses, High Net Value Individuals (HNIs), Eligible Retail Investors (ERIs) fulfilling the specified qualifications] are proposed to be collected online via the platform and pooled for investment under the Alternative Investment Fund ('AIF'). The SEBI Consultation Paper presents recommendations for a regulatory structure regulating safety-based crowdfunding approaches for start-ups and small and medium-sized enterprises (SMEs).

CHINA

Although policies in support of internet funding and equity crowdfunding have been announced by the Chinese government, the regulatory climate remains unclear and is subject to ongoing scrutiny. In China, there is no clear-cut legislation or regulatory authority on equity crowdfunding.

Existing equity crowdfunding platforms in China adhere to one of two sets of regulations for 1) financial institutions or 2) internet financing platforms. Neither set of regulations satisfactorily covers all forms of equity crowdfunding as it exists in China.

China's 'Going Out policy' and the 'Internet+ Policy' are the main policies that govern the Equity Crowdfunding in China. The State Council, China Internet Finance Association and the National Development and Reform Commission (NDRC) are few of the organizations that has issued various policies and guidelines regarding Crowdfunding in China.

SOUTH AFRICA

As it currently stands, in South Africa, crowdfunding is not strictly regulated. As such, it has been notified by the Financial Services Board (FSB), although certain crowdfunding practices might already be subject to current legislation. Loan-based crowdfunding and crowdfunding based on investment are referred to as crowdfunding for financial returns and are particularly relevant to a regulator like the FSB.

The International Organization of securities Commissions (IOSCO), of which South Africa is a member, on 9 July 2015, published a report on SME Financing through Capital markets, which highlights the challenge to regulators to strike a balance between encouraging crowdfunding and mitigating the risk associated with it, and protecting investors. Crowdfunding as a phenomenon is not yet controlled as such in South Africa. Crowdfunding operations, however, could already be subject to existing laws and regulations, depending on the region in which they operate.

The Banks Act 31, Companies Act 71, Collective Investment Schemes Control Act 45, Financial Advisory and Intermediary Services Act 37, Financial markets Act 19, National Credit Regulation Act 34 of 2005, etc. are the various laws that are connected to activities related to crowdfunding.

7. CONCLUSIONS

The major focus of Crowdfunding Platforms is fundraising for the purpose of social causes or creative projects. This supports the operations and strategies adopted by them. Business models of Crowdfunding Platforms is either reward based / donation Based. An Investor can contribute for as low as Rs 50. Minimum amount permitted to float a project for fundraising is as low as Rs1000. The charges applicable for the services provided by Crowdfunding Platforms are either free or they charge a nominal fee. Crowdfunding is only in the infant stages of its development in India. It is only through greater awareness that the attitude towards crowdfunding can be changed in the country. For as long as India has been formed there has been donations being taken from individuals for the purpose of building temples, festivals, marriages and religious occasions, all of which are celebrated through these types of informal contributions. But fundraising through internet platforms from the public is an innovative concept. Crowdfunding is not an alternative to funding to all other forms of funding available right now but is a viable new method of obtaining funding just like any other platforms available till date.

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A STUDY OF THE RELATIONSHIP BETWEEN STOCK MARKET INDEX PRICE AND CORRESPONDING PRICE OF GOLD FROM INDIAN MARKET PERSPECTIVE AND COMPARATIVE PERCENTAGE OF RETURN IN LONG TERM

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ABSTRACT

The study of Stock Market is one the most challenging as well as rewarding task for any financial analyst. Predictions about stock markets carry a lot of potential risk and can easily lead to a catastrophic loss of assets if a small factor is overlooked or not considered. There are many tools for studying past market trends and predicting the future market scenarios which takes in account all available data and tries to predict any highly probable future events. In this paper, attempt was made to analyze the relation between monthly closing price of NIFTY which is index of National Stock Exchange (NSE) of India and GOLD Price. The price points over the last 15 years were looked into and attempt was made to establish a relation between the two instruments. The Stock Market Index Price was marked against the price of gold and attempt was made to find out if there is any relation between them. The Karl Pearson's Correlation coefficient technique was used to find out exactly how precisely the prices are interdependent. The return rate provided by both over a short range of time as well as in the long span of time was also examined. After a thorough data collection, calculation and analysis, the paper concludes that, there is a strong positive correlation between the Stock Market Index Price and corresponding Price of GOLD over the larger time span of last 15 years. Though there have been instances where a negative correlation was also seen due to high uncertainty and fear factor of the investor's point of thinking towards stock market, however keeping in mind that the market crash during those period of times, they can be concluded as case studies. The detailed analysis of this paper also revealed that investing in NIFTY can provide short term benefits; however, in the long span of time horizon GOLD gives a much higher return on investment percentage compared to index NIFTY.

KEYWORDS

ROI, gold, nifty, inverse correlation.

JEL CODES

G10, O16.

1. INTRODUCTION

This study is aiming at two variables, the stock market index price and Gold price as they have significant position within current era of economy and are highly weighty assets for investors in the financial market. Gold is considered an important and leading asset and commodity in the bullion market and industrial sectors, as well as a valuable personal property, an investment and saving tool, an exchange asset and a hedging asset against different critical situations. If stock market is the topic of discussion, its importance is indisputably unquestionable, in fact it is impossible to imagine a world without a stock market as it plays a pivotal role in the economy of any country, and helps towards the progress of the economy, and can cause a enormous damaging impression when not observed. The stock market can be divided into two main segments, primary market (Cash Market) and derivative market (Future & Options Segment). The stock markets and their movements are closely related to and affected by different economic indicators such as inflation, gross domestic product (GDP), jobless rate, consumer price index (CPI), producer price index (PPI), along with other indicators. Many investors choose to invest in the stock market as well as bullion market, in order to minimize or eliminate the systematic risk. It is also considered as insurance against risk to invest in gold as well, as in, using gold as a hedging tool. Because stock market is seen by the investors as a return of value whereas gold is considered as a store of value. There are two types of psychological emotions that run the instruments of the investment market which has association with risk, those two emotions or the psychological states of investors are known as greed and fear. It is generally said that when fear captures the stock market investors want to withdraw the money from individual stocks and invest in some a safer instrument like gold. In this paper attempt has been made to figure out whether there exists any type of correlation between the stock market index price and the gold price for mid to short time of 1 year time frame or in the longer time frame of 5, 10 or 15 years. In this paper analysis was made to figure out what would be the comparative return percentage of both the gold price and the stock market index return and will compare which instrument between these two will generate more return in a mid-term and long-term investment.

2. OBJECTIVES

The objectives of this study are:

1. To examine whether stock market influences gold market price or not.
2. To find out the correlation between stock market index price and gold price in short term and in long term.
3. To check the long term correlation between stock market index price and gold price and short term correlation between the same.
4. To find out in mid to long time frame which instrument between gold and stock index generates more return and how much greater percentage.

3. RESEARCH GAP

Many previous studies focused on the relationship between stock market and macroeconomic variables and other commodities but very few studies focused on the relationship between the stock market and the gold price in the long-term and short-term perspectives. Therefore, an attempt has been made in this paper to fill up that research gap by analyzing the relationship between the stock market and gold price in the short range and long-range perspectives.

4. SURVEY OF LITERATURE

Kaliyamoorthy (2012) on the basis of their study established that there is no significant relationship exists with the Stock market and Gold price and when stock market crashes, gold prices have not been increased.

Bhunia (2012) found co-movement in gold prices and stock prices. Similarly, this study also found that in a longer time frame both gold price and the stock market will have a positive correlation and both will generate good return on investments

Mishra et al., (2010) examined the volatility of domestic gold and stock market returns based on BSE index during the period of 1991-2009 by applying the econometrics framework and found that the gold prices influences stock market returns in India and vice versa.

Arouri et al. (2015) study using VAR-GARCH model to investigate the effect of gold price volatility on the stock market returns in China for the period of 2004-2011 establishes significant impact of gold price volatility on China's stock market return.

5. RESEARCH METHODOLOGY

In order to proceed with this paper historical data have been collected for the last 15 years i.e. April, 2005 to March, 2020 and analysis was performed.

5a. Hypotheses: Here, H_0 is null hypothesis and H_1 alternate hypothesis.

➤ For our **first** objective, the following null hypothesis has been formulated:

H_0 : Stock market does not influence gold market price ($r=0$), where r is the correlation coefficient.

H_1 : Stock market influences gold market price ($r \neq 0$), where r is the correlation coefficient.

➤ For our **second** objective, the following null hypothesis has been formulated:

H_0 : Stock market does not have a correlation with gold market price in short term and in long term i.e. $r=0$, where r is the correlation coefficient at different time frames.

H_1 : Stock market has a correlation with gold market price in short term and in long term i.e. $r \neq 0$, where r is the correlation coefficient at different time frames.

➤ For our **third** objective, the following null hypothesis has been formulated:

H_0 : Stock market does not have a correlation with gold market price in short term and in long term i.e. $r=0$, where r is the correlation coefficient at different time frames.

H_1 : Stock market has a positive correlation or a negative correlation with gold market price in short term and in long term i.e. check either $r < 0$ or $r > 0$, where r is the correlation coefficient at different time frames.

➤ For our **fourth** objective, the following null hypothesis has been formulated:

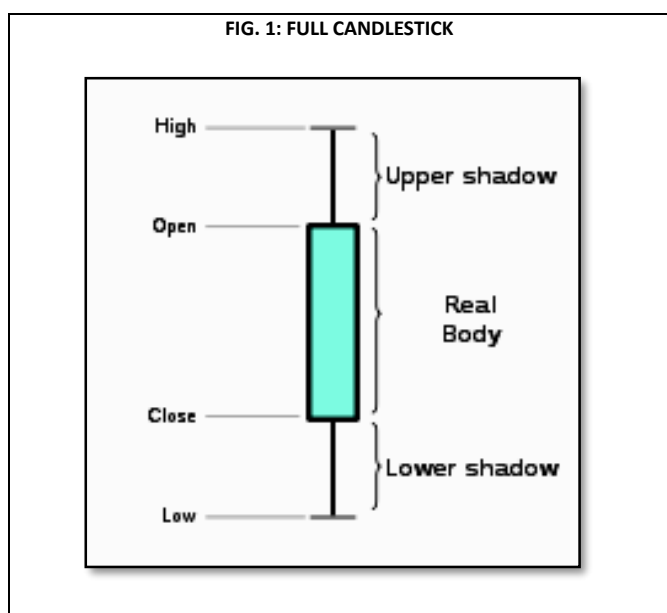
H_0 : Gold generates same return as stock market in long term (in percentage).

H_1 : Gold generates more return than stock market in long term (in percentage).

5b. Data Source: The data collected is the secondary data which is collected from <https://in.investing.com> and also rechecked with National Stock Exchange (NSE) for Nifty price and Multi Commodity Exchange (MCX) for the prices of gold as per availability.

5c. Charts and Graphs: The type of chart which has been used for collecting the data is closing price of the time frame of candlestick chart for both the gold and nifty closing price.

- **Candlesticks:** The Opening Price and Closing Price is plotted in a way as shown in Fig.1 and Fig.2. The timeframe's high and low forms the lower and upper wicks of the candlestick. If the price has increased during the time, it is shown in either blue or green and if the price has gone down, it is shown in Red. The resultant chart formed is as shown in Fig.1 and Fig.2.



Green/Blue candles are bullish candle and red are the bearish candles. For bullish candle closing price is higher than the opening price and for the bearish candle closing price is lower than the opening price. That's how the prices have been captured.

5d. Time Period and Time Interval: In this study, a time interval of 15 years has been taken. For reference, each and every Financial Year has been taken, starting from April 2005 till March 2020. The data from these 15 years consists of the monthly closing price of Gold and NIFTY respectively within the selected timeframe. Putting the collected data to use, the correlation between the closing prices of gold and NIFTY has been calculated on a Year-on-Year (YOY) basis. For further analysis between the closing prices of gold and NIFTY as well as to calculate the Return on Investment (ROI), the percentage increase in the prices of gold and NIFTY has been calculated within the time of 5 years (APRIL 2005 – MARCH 2010), 10years (APRIL 2005 – MARCH 2015) and 15years (APRIL 2005 – MARCH 2020).

5e. Statistical Methods & Mathematical Formula Used

- To check the correlation between the **two** variables: **Stock market index price (X)** and **Gold price (Y)**, **Karl Pearson's correlation coefficient ($r_{(X, Y)}$ or r)** between the aforesaid time period and the price point was used. The coefficient of correlation r_{xy} between two variables **X** (Stock market index price) and **Y**(Gold price), for the bi-variate dataset (X_i, Y_i) where $i = 1, 2, 3, \dots, n$; is given by –

$$r_{(X,Y)} = \frac{\text{cov}(X,Y)}{S_X S_Y}$$

Where,

- Cov(X, Y)** = the covariance between X and Y
- S_X = Standard Deviation of X
- S_Y = Standard Deviation of Y

$$\text{cov}(X, Y) = \left(\frac{1}{n} \sum XY \right) - \bar{X}\bar{Y}$$

$$(S_X)^2 = \left(\frac{1}{n} \sum X^2 \right) - (\bar{X})^2$$

$$(S_Y)^2 = \left(\frac{1}{n} \sum Y^2 \right) - (\bar{Y})^2$$

n = Total Frequency

Plotting the data (X and Y) to check if the Scatter Diagram is consistent and Pearson’s correlation coefficient can be determined or not.

Using the Pearson’s correlation coefficient formula, the Pearson’s correlation coefficient is calculated.

➤ To check the return percentage of gold and stock index from mid to long term time frame, the 15 years historical data have been divided into 3 parts (March-2010, March-2015 and March-2020) from the base April-2005.

Therefore, the formula used:

$$\text{Percentage change in Stock index price} = \frac{(\text{Stock index price})_j - (\text{Stock index price})_b}{(\text{Stock index price})_b} \times 100$$

Where,

5 years: $(\text{Stock index price})_j$ = Stock Index Price on March, 2010

$(\text{Stock index price})_b$ = Stock Index Price on April, 2005 (Base)

10 years: $(\text{Stock index price})_j$ = Stock Index Price on March, 2015

$(\text{Stock index price})_b$ = Stock Index Price on April, 2005 (Base)

15 years: $(\text{Stock index price})_j$ = Stock Index Price on March, 2020

$(\text{Stock index price})_b$ = Stock Index Price on April, 2005 (Base)

$$\text{Percentage change in Gold price} = \frac{(\text{Gold price})_j - (\text{Gold price})_b}{(\text{Gold price})_b} \times 100$$

Where,

5 years: $(\text{Gold price})_j$ = Gold Price on March, 2010

$(\text{Gold price})_b$ = Gold Price on April, 2005 (Base)

10 years: $(\text{Gold price})_j$ = Gold Price on March, 2015

$(\text{Gold price})_b$ = Gold Price on April, 2005 (Base)

15 years: $(\text{Gold price})_j$ = Gold Price on March, 2020

$(\text{Gold price})_b$ = Gold Price on April, 2005 (Base)

6. CASE STUDY BASED ON ANALYSIS AND FINDINGS

6a. CALCULATIONS TO FIND OUT THE RELATIONSHIP BETWEEN THE MONTHLY CLOSING PRICE OF NIFTY AND GOLD PRICE

TABLE 1: CALCULATIONS TO FIND OUT THE CORRELATION COEFFICIENT BETWEEN NIFTY AND GOLD PRICE

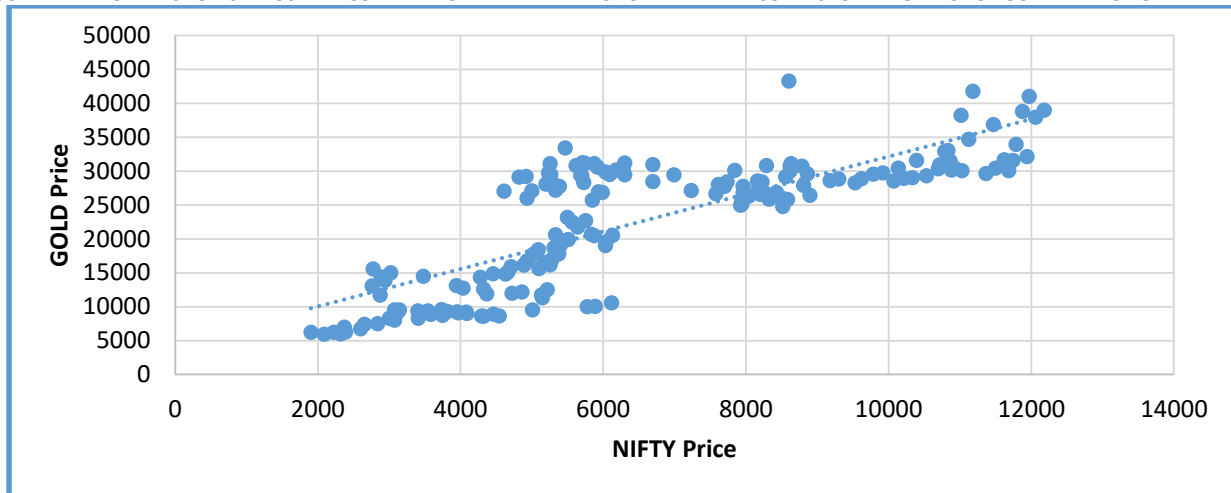
Month & Year	Gold Price (Y)	NIFTY Price (X)	Y ²	X ²	XY
Apr-05	6240	1902	38937600	3617604	11868480
May-05	5964	2086	35569296	4351396	12440904
Jun-05	6232	2223	38837824	4941729	13853736
Jul-05	6016	2314	36192256	5354596	13921024
Aug-05	6318	2387	39917124	5697769	15081066
Sep-05	6762	2598	45724644	6749604	17567676
Oct-05	7000	2369	49000000	5612161	16583000
Nov-05	7432	2653	55234624	7038409	19717096
Dec-05	7508	2836	56370064	8042896	21292688
Jan-06	8308	3002	69022864	9012004	24940616
Feb-06	8037	3075	64593369	9455625	24713775
Mar-06	8329	3405	69372241	11594025	28360245
Apr-06	9427	3539	88868329	12524521	33362153
May-06	9579	3072	91757241	9437184	29426688
Jun-06	9167	3113	84033889	9690769	28536871
Jul-06	9535	3140	90916225	9859600	29939900
Aug-06	9405	3401	88454025	11566801	31986405
Sep-06	8907	3580	79334649	12816400	31887060
Oct-06	8776	3745	77018176	14025025	32866120
Nov-06	9275	3950	86025625	15602500	36636250
Dec-06	9145	3967	83631025	15737089	36278215
Jan-07	9232	4077	85229824	16621929	37638864
Feb-07	9622	3734	92582884	13942756	35928548
Mar-07	9340	3816	87235600	14561856	35641440
Apr-07	9058	4090	82047364	16728100	37047220
May-07	8674	4296	75238276	18455616	37263504
Jun-07	8589	4323	73770921	18688329	37130247
Jul-07	8674	4542	75238276	20629764	39397308
Aug-07	8947	4460	80048809	19891600	39903620
Sep-07	9537	5008	90954369	25080064	47761296
Oct-07	10063	5886	101263969	34644996	59230818
Nov-07	10042	5776	100841764	33362176	58002592
Dec-07	10610	6118	112572100	37429924	64911980
Jan-08	11788	5132	138956944	26337424	60496016
Feb-08	12525	5214	156875625	27185796	65305350
Mar-08	12020	4721	144480400	22287841	56746420
Apr-08	11368	5145	129231424	26471025	58488360
May-08	12188	4858	148547344	23600164	59209304
Jun-08	12757	4036	162741049	16289296	51487252
Jul-08	12609	4323	158986881	18688329	54508707
Aug-08	11915	4364	141967225	19044496	51997060
Sep-08	13156	3940	173080336	15523600	51834640
Oct-08	11746	2871	137968516	8242641	33722766

Nov-08	13114	2761	171976996	7623121	36207754
Dec-08	13893	2940	193015449	8643600	40845420
Jan-09	14419	2884	207907561	8317456	41584396
Feb-09	15598	2775	243297604	7700625	43284450
Mar-09	15008	3021	225240064	9126441	45339168
Apr-09	14522	3476	210888484	12082576	50478472
May-09	14900	4454	222010000	19838116	66364600
Jun-09	14387	4276	206985769	18284176	61518812
Jul-09	14819	4631	219602761	21446161	68626789
Aug-09	15143	4664	229310449	21752896	70626952
Sep-09	15629	5098	244265641	25989604	79676642
Oct-09	15926	4709	253637476	22174681	74995534
Nov-09	17761	5020	315453121	25200400	89160220
Dec-09	16528	5187	273174784	26904969	85730736
Jan-10	16165	4887	261307225	23882769	78998355
Feb-10	16755	4931	280730025	24314761	82618905
Mar-10	16210	5253	262764100	27594009	85151130
Apr-10	16982	5275	288388324	27825625	89580050
May-10	18434	5087	339812356	25877569	93773758
Jun-10	18706	5309	349914436	28185481	99310154
Jul-10	17798	5375	316768804	28890625	95664250
Aug-10	19069	5397	363626761	29127609	102915393
Sep-10	19024	6030	361912576	36360900	114714720
Oct-10	19568	6041	382906624	36493681	118210288
Nov-10	20521	5875	421111441	34515625	120560875
Dec-10	20566	6130	422960356	37576900	126069580
Jan-11	19931	5508	397244761	30338064	109779948
Feb-11	20657	5331	426711649	28419561	110122467
Mar-11	20703	5831	428614209	34000561	120719193
Apr-11	22700	5753	515290000	33097009	130593100
May-11	22472	5564	504990784	30958096	125034208
Jun-11	21792	5641	474891264	31820881	122928672
Jul-11	23198	5497	538147204	30217009	127519406
Aug-11	27100	4998	734410000	24980004	135445800
Sep-11	26011	4931	676572121	24314761	128260241
Oct-11	27191	5331	739350481	28419561	144955221
Nov-11	29142	4820	849256164	23232400	140464440
Dec-11	27055	4609	731973025	21242881	124696495
Jan-12	28100	5198	789610000	27019204	146063800
Feb-12	27781	5386	771783961	29008996	149628466
Mar-12	28088	5298	788935744	28068804	148810224
Apr-12	29070	5253	845064900	27594009	152704710
May-12	29242	4920	855094564	24206400	143870640
Jun-12	29508	5264	870722064	27709696	155330112
Jul-12	29772	5231	886371984	27363361	155737332
Aug-12	31120	5253	968454400	27594009	163473360
Sep-12	31267	5708	977625289	32581264	178472036
Oct-12	30857	5620	952154449	31584400	173416340
Nov-12	31120	5875	968454400	34515625	182830000
Dec-12	30593	5920	935931649	35046400	181110560
Jan-13	29919	6031	895146561	36372961	180441489
Feb-13	29362	5697	862127044	32455809	167275314
Mar-13	29392	5686	863889664	32330596	167122912
Apr-13	26988	5934	728352144	35212356	160146792
May-13	26871	5986	722050641	35832196	160849806
Jun-13	25728	5848	661929984	34199104	150457344
Jul-13	28336	5726	802928896	32787076	162251936
Aug-13	33436	5466	1117966096	29877156	182761176
Sep-13	31150	5744	970322500	32993536	178925600
Oct-13	31208	6298	973939264	39664804	196547984
Nov-13	30182	6177	910953124	38155329	186434214
Dec-13	29480	6298	869070400	39664804	185665040
Jan-14	29508	6090	870722064	37088100	179703720
Feb-14	30622	6281	937706884	39450961	192336782
Mar-14	28483	6696	811281289	44836416	190722168
Apr-14	31003	6696	961186009	44836416	207596088
May-14	27164	7233	737882896	52316289	196477212
Jun-14	28072	7614	788037184	57972996	213740208
Jul-14	27784	7701	771950656	59305401	213964584
Aug-14	27784	7961	771950656	63377521	221188424
Sep-14	26835	7961	720117225	63377521	213633435

Oct-14	25907	8324	671172649	69288976	215649868
Nov-14	25821	8584	666724041	73685056	221647464
Dec-14	26598	8290	707453604	68724100	220497420
Jan-15	27892	8809	777963664	77598481	245700628
Feb-15	26468	8896	700555024	79138816	235459328
Mar-15	26058	8497	679019364	72199009	221414826
Apr-15	26598	8203	707453604	67289209	218183394
May-15	26856	8428	721244736	71031184	226342368
Jun-15	26295	8376	691427025	70157376	220246920
Jul-15	24785	8515	614296225	72505225	211044275
Aug-15	26533	7995	704000089	63920025	212131335
Sep-15	25800	7943	665640000	63091249	204929400
Oct-15	26360	8047	694849600	64754209	212118920
Nov-15	25110	7943	630512100	63091249	199448730
Dec-15	25000	7925	625000000	62805625	198125000
Jan-16	26705	7580	713157025	57456400	202423900
Feb-16	29467	6991	868304089	48874081	206003797
Mar-16	28432	7735	808378624	59830225	219921520
Apr-16	30136	7845	908178496	61544025	236416920
May-16	28583	8163	816987889	66634569	233323029
Jun-16	30827	8285	950303929	68641225	255401695
Jul-16	31107	8633	967645449	74528689	268546731
Aug-16	30740	8785	944947600	77176225	270050900
Sep-16	30805	8618	948948025	74269924	265477490
Oct-16	30050	8618	903002500	74269924	258970900
Nov-16	28432	8224	808378624	67634176	233824768
Dec-16	27698	8178	767179204	66879684	226514244
Jan-17	29165	8558	850597225	73239364	249594070
Feb-17	29597	8861	875982409	78517321	262259017
Mar-17	28604	9179	818188816	84254041	262556116
Apr-17	28848	9301	832207104	86508601	268315248
May-17	28890	9619	834632100	92525161	277892910
Jun-17	28303	9528	801059809	90782784	269670984
Jul-17	28597	10074	817788409	101485476	288086178
Aug-17	29771	9922	886312441	98446084	295387862
Sep-17	29561	9786	873852721	95765796	289283946
Oct-17	29058	10332	844367364	106750224	300227256
Nov-17	28932	10210	837060624	104244100	295395720
Dec-17	29352	10529	861539904	110859841	309047208
Jan-18	30065	11029	903904225	121638841	331586885
Feb-18	30442	11498	926715364	132204004	350022116
Mar-18	30442	10135	926715364	102718225	308529670
Apr-18	30945	10714	957593025	114789796	331544730
May-18	30861	10756	952401321	115691536	331940916
Jun-18	30358	10695	921608164	114383025	324678810
Jul-18	29645	11363	878826025	129117769	336856135
Aug-18	30107	11681	906431449	136445761	351679867
Sep-18	30484	10923	929274256	119311929	332976732
Oct-18	31616	10392	999571456	107993664	328553472
Nov-18	30190	10878	911436100	118330884	328406820
Dec-18	31491	10862	991683081	117983044	342055242
Jan-19	33042	10832	1091773764	117332224	357910944
Feb-19	32917	10786	1083528889	116337796	355042762
Mar-19	31700	11621	1004890000	135047641	368385700
Apr-19	31574	11742	996917476	137874564	370741908
May-19	32162	11939	1034394244	142539721	383982118
Jun-19	33965	11788	1153621225	138956944	400379420
Jul-19	34720	11120	1205478400	123654400	386086400
Aug-19	38243	11014	1462527049	121308196	421208402
Sep-19	36859	11469	1358585881	131537961	422735871
Oct-19	38830	11878	1507768900	141086884	461222740
Nov-19	37950	12060	1440202500	145443600	457677000
Dec-19	38998	12182	1520844004	148401124	475073636
Jan-20	41011	11970	1681902121	143280900	490901670
Feb-20	41766	11181	1744398756	125014761	466985646
Mar-20	43276	8603	1872812176	74011609	372303428

6b. SCATTER DIAGRAM OF 15 YEARS DATA

FIG. 3: SCATTER DIAGRAM SHOWS A POSITIVE CORRELATION BETWEEN PRICE OF NIFTY AND CORRESPONDING PRICE OF GOLD IN A LONGER TIME HORIZON



As per **first objective** it is established that there is an influence of stock market price to the price of gold. So for objective 1, H_1 as our **alternate hypothesis**: stock market influences gold market price ($r \neq 0$), where r is the correlation coefficient has been established.

6c. ADDITIONAL CALCULATIONS

TABLE 2: ADDITIONAL CALCULATIONS BASED ON GOLD PRICE AND NIFTY PRICE

	Gold Price (Y)	NIFTY Price(X)	Y ²	X ²	XY
Sum	4094444	1187877	1.08727E+11	9170440641	30704131007
Average	22746.91	6599.317	604038465.2	50946892.5	170578505.6
\bar{Y}	22746.9111				
n	180				
\bar{X}		6599.31667			
$(S_y)^2$	86616500.1				
$(S_x)^2$		7395911.98			
(S_y)	9306.7986				
(S_x)		2719.54261			
$cov(X, Y)$	20464436				
r	0.80854388				

Calculated value of correlation coefficient shows a positive correlation between Price of Nifty and corresponding price of gold in a longer time horizon.

As per our **second objective** it is established by the mathematical calculations that there is a correlation between stock market price and price of gold. So for objective 2, H_0 : Stock market does **not** have a correlation with gold market price in short term and in long term has been rejected and H_1 : Stock market has a correlation with gold market price in short term and in long term($r \neq 0$) as **alternate hypothesis** has been accepted.

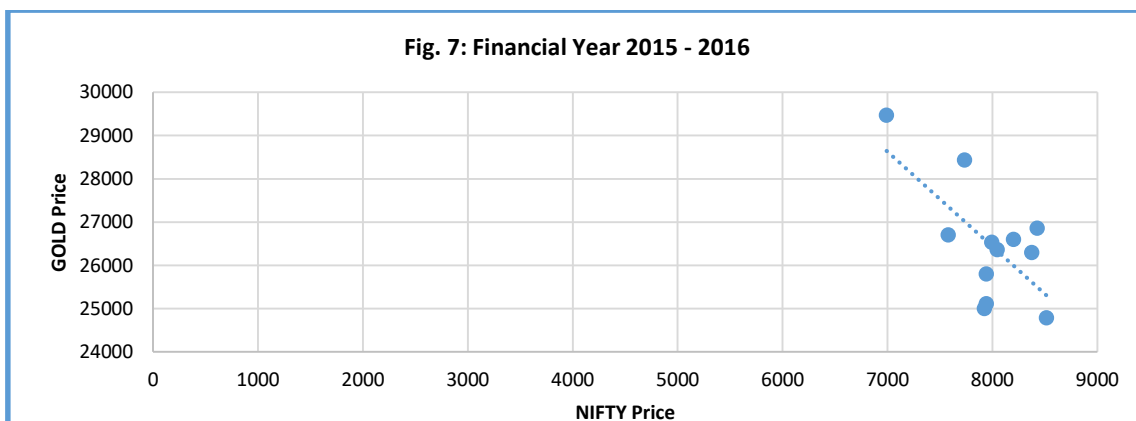
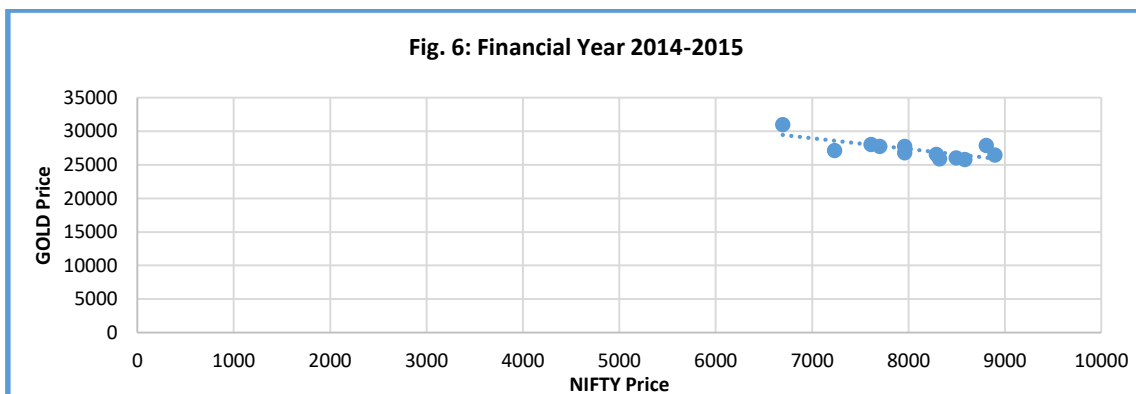
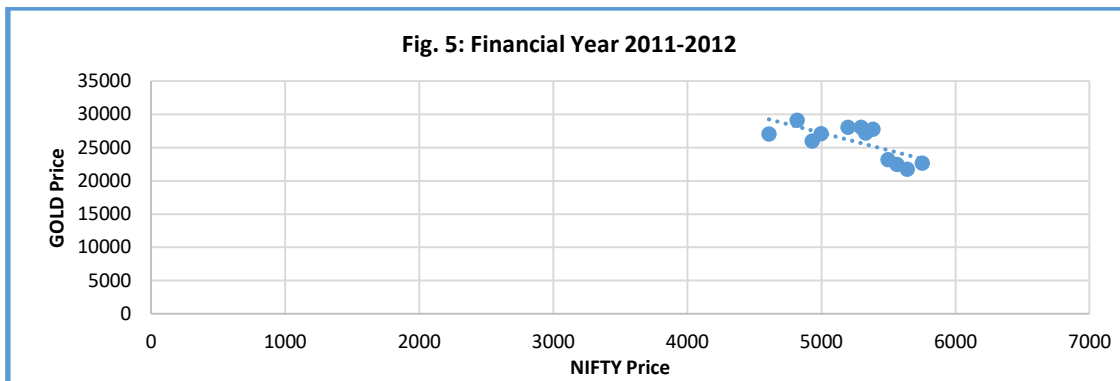
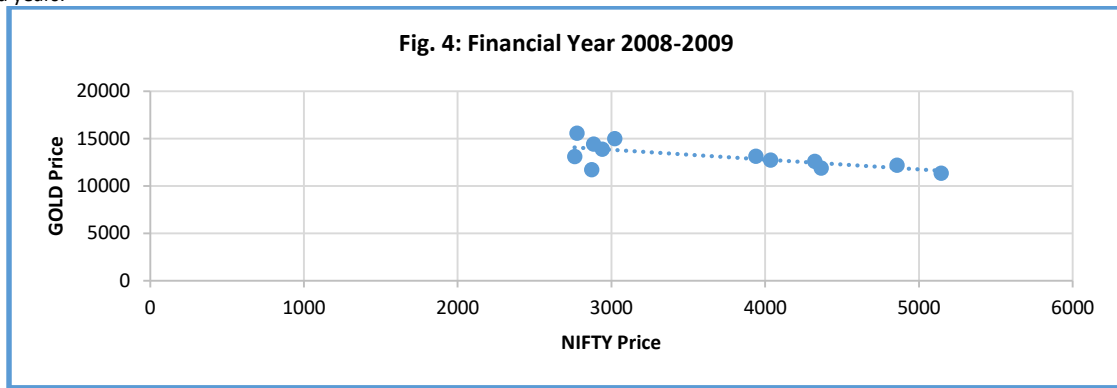
6d. Sample Cases: However, in some short term cases (12 months period), it has been observed that the relationship between Gold Price and NIFTY Price shows a negative correlation. Below is the year-wise correlation for the last 15 years:

TABLE 3: YEAR-WISE CORRELATION OF THE PERIOD MARCH, 2006 TO MARCH, 2020

Month & Year	GOLD PRICE	NIFTY PRICE	12 months correlation
Mar-06	8329	3405	0.92530396
Mar-07	9340	3816	-0.336331751
Mar-08	12020	4721	0.469943605
Mar-09	15008	3021	-0.687539113
Mar-10	16210	5253	0.715185469
Mar-11	20703	5831	0.555694906
Mar-12	28088	5298	-0.705286675
Mar-13	29392	5686	0.406668985
Mar-14	28483	6696	-0.139050916
Mar-15	26058	8497	-0.736941785
Mar-16	28432	7735	-0.667521181
Mar-17	28604	9179	0.148555223
Mar-18	30442	10135	0.656549873
Mar-19	31700	11621	-0.306599935
Mar-20	43276	8603	-0.474818964

6e. SCATTER DIAGRAM FOR SELECTED YEAR FOR NEGATIVE CORRELATION

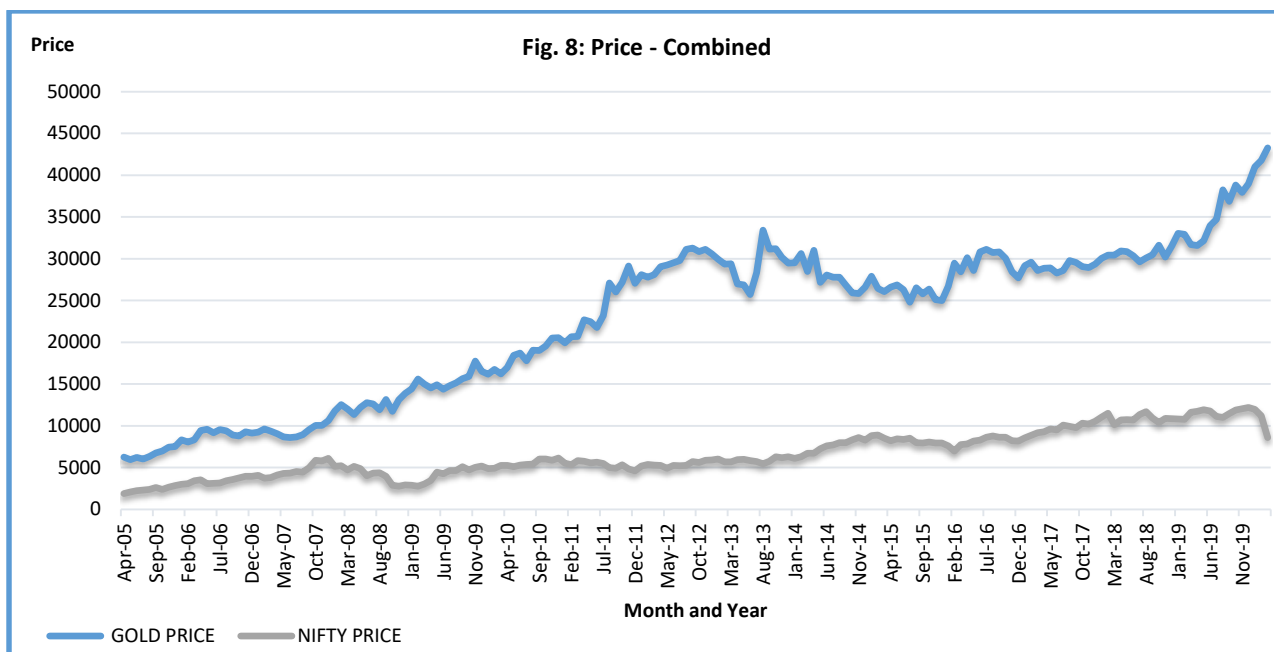
For the selected years:



In this four selected financial year when Indian stock market had witnessed market crash it has been observed that price of the gold had gone up and thus creates negative correlation with the stock index price. These are the time when extreme fear captures the investors’ mindset and they search and park their liquid assets in a safer instrument like gold.

For our third objective, mathematical calculations show that stock market has a positive correlation in long term with gold market price and a negative correlation with gold market price in short term, so here, H_0 : the stock market does not have a correlation with gold market price in short term and in long term has been rejected and H_1 : the stock market has a positive correlation ($r > 0$) with gold market price in long term and a negative correlation ($r < 0$) with gold market price in short term as our alternate hypothesis has been accepted.

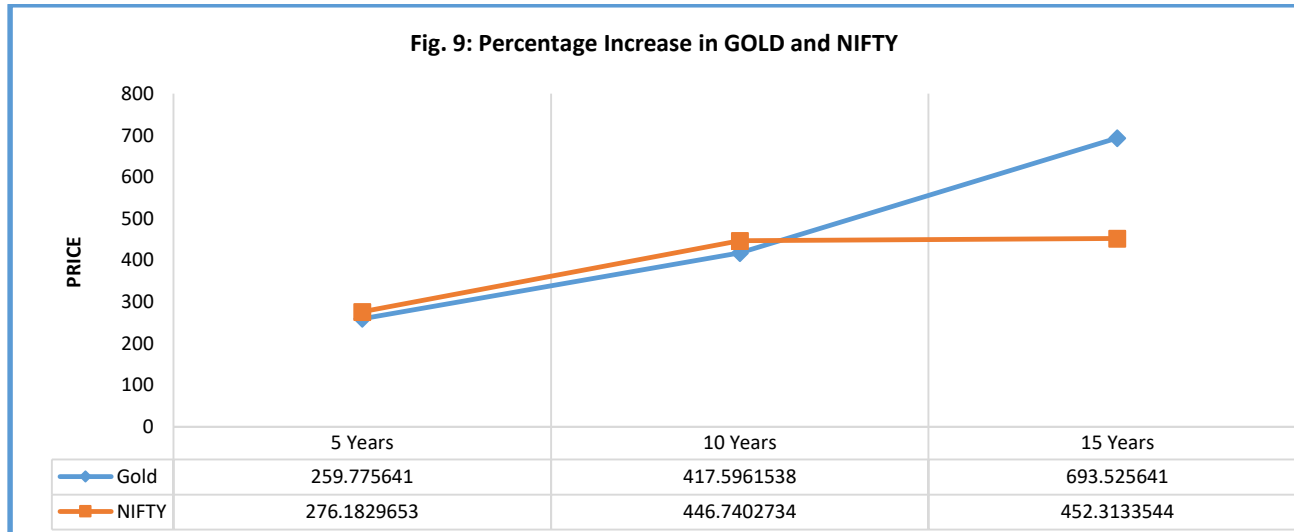
6f. COMBINED PRICE CHART



6g. PERCENTAGE OF ROI IN BOTH GOLD AND STOCK FOR MID TO LOG TIME HORIZON

TABLE 4: ROI IN BOTH GOLD AND STOCK FOR MID TO LOG TIME HORIZON (IN %)

% Increase	5 Years	10 Years	15 Years
Gold	259.7756	417.5962	693.5256
NIFTY	276.183	446.7403	452.3134
Increase Ratio	5 Years	10 Years	15 Years
Gold	2.597756	4.175962	6.935256
NIFTY	2.76183	4.467403	4.523134



For our fourth objective, mathematical calculations show that gold has greater return on investment in longer time horizon, so here H_0 : Gold generates same return as stock market in long term (in percentage) has been rejected and H_1 : Gold generates more return than stock market in long term (in percentage) as our alternate hypothesis has been accepted.

7. CONCLUSION

Gold is a precious metal so the supply of this is relatively scarce. Due to this reason this is traditionally well known conservative investment instrument among the investors. Gold price movement in shorter time frame can give more or less accurate reflection of the fear factor about upcoming economic condition in the market. In the state of high volatility in the market, investors are in a state of fear about their investments so they tend to move out from the high risk assets like equity shares and invest/park their liquid money to the relatively safer assets like Gold. As the demand of the gold increases with the supply being constant, so the price of the gold goes high. Analysis of historical data confirms that in the shorter time frame when stock market crashes, gold prices went up and became the safe house of the investors. It also confirms that in a longer time frame both gold and the stock price will have a positive correlation and both will generate good return on investments. Statistical analysis of historical data suggests that in a short timeframe when fear factor is very high or in the bearish market there is an inverse correlation between stock index price and price of Gold in commodity market. It has also been concluded that in long term both the instruments have been positively correlated. Mathematical calculations of the historical price data of both the instruments show that the return on investments of the gold is greater than the return of stock market index.

8. LIMITATIONS OF THE STUDY

The limitations of this study is that it has not considered the impact of the factors like Rupee-USD \$ exchange rate, inflation and Crude oil price in world market.

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