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Article

# The Changes in the Perceptions of Women towards the Symbolic Value of Gold: Marketing and Financial Implications

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**Abstract:** Gold is a sought-after good across the globe, particularly among Asian countries. The demand for gold is influenced by symbolic, utilitarian, and hedonic values. One of the critical values among these is symbolic value, which refers to the meanings associated with a commodity. This study attempts to identify the impact of cultural dynamism on the perceptions of women towards the symbolic value of gold. Cultural dynamism is a definite outcome of globalization; it refers to the changes in cultural beliefs and practices as an outcome of exposure to the elements of other cultures. These cultural changes will have an impact on the consumption of all types of goods, particularly those goods that are demanded due to a region's culture. The present study attempts to identify the direction of cultural dynamics and its impact on gold in India as an outcome of the economy opening up in 1990. The perceptions of two sets of samples have been compared and contrasted in this study: one is a set of females born and married (this is because marriage has a vital role in determining perceptions towards gold) before the advent of globalization and its impacts in India, and the second set is the daughters (to ensure that other elements, such as socioeconomic aspects, are not affecting the perception) of the first set of customers. This study adopts a multidimensional scaling technique to analyze the data; this is due to the sound method that it is, and also due to the ability to provide a visual depiction of the outcomes. It could reveal evidence of polarization regarding perceptions towards the symbolic value of gold; it opened a research gap. A similar study with which to identify perceptions towards hedonic and symbolic values is suggested as an outcome of the study.

**Keywords:** symbolic value; women's perception towards gold; cultural dynamics; gold buyer behavior; multidimensional scaling; physical gold



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## 1. Introduction

Gold is one of the most sought-after goods across the world. While the commodity offers direct financial worth, the reason for its unprecedented demand is beyond solely financial benefits. The key reason for this lies in the religious and cultural significance attributed to the commodity. Apart from financial worth and religious as well as cultural significance, gold is a component of several industries, such as electronics, medicine, etc. It also has relevance as an innovation enabler of new technologies, adding to the demand (Mehrotra 2004).

All of these utilities of gold are due to its unique physical properties; it is the most malleable and ductile of all metals. A few of the distinctive qualities that separate gold from other metals include the role that it plays as central banks' reserve asset and the outstanding physical as well as chemical properties that make it ideal for use in technological applications. Gold is synonymous with luxury and wealth. Despite being considered a key financial asset, the fact that half of all the gold above-ground stocks exist in the form of jewelry is interesting. Gold, regarded as a currency in its own right, is a store of wealth and an efficient diversifier of risk (Appadurai 1986).

The demand for gold across cultural settings is different; seven of the top ten countries in terms of gold consumption are Asian countries (PWC 2013). India and China have been the largest consumers globally (ET 2021). Despite the pandemic-related uncertainties, India and China together account for more than half of all global gold imports. Among the two economies, India was the largest importer in 2021 (BS 2021).

India, essentially a consumer society (Venkatesh 1994), has a high dependence on imports, and gold forms a crucial part of imports every year. Gold remains at the second spot in the list of imported commodities, after crude (Pines 2021). The key reason for the gold obsession in India is related to culture. Gold offers multiple purposes, such as those of utilitarian, symbolic, and hedonic natures, though the obsession is rooted in cultural factors (Pathy et al. 2021).

The cultural value associated with gold is a critical driver of the demand for gold. Cultural value is hence the key premise of this study, as culture in societies is bound to changes. Among the factors that could cause cultural changes is globalization, as it leads to the exchange of cultural values (Raikhan et al. 2014).

## 2. Literature Review

### 2.1. Globalization and Cultural Dynamism

Ever since the world opened up through globalization, there has been a relentless flow of people, capital, technology, and ideas across borders. This leads to people becoming exposed to the elements of other cultures (Holton 2000). Due to the dynamic nature of culture, this exposure will invariably lead to social changes in societies (Corner 1991). Initially, researchers were arguing towards a single global culture as an outcome of globalization; however, further researchers have identified that changes are not necessarily unidimensional. The changes differ across different segments of the globe, while the occurrence of change is undisputed. These changes are likely to impact the consumer cultures of societies; this process of change is called consumer culture theory (CCT). Arnould and Thompson (2005) defined CCT as “a social arrangement in which the relations between lived culture and social resources, and between meaningful ways of life and the symbolic and material resources on which they depend, are mediated through markets”. Consumer culture theory is explained as a culture of consumption, and is considered significant and of value (Ritzer 2007).

This change has to do with the dynamic nature of culture, which is bound to change with exposure to other cultures (Sussman 2000). The present paper will look at the changes in consumer culture through the perspective of cultural dynamism. As a result of cultural dynamism, marketers at the end of the twentieth century were confronted with increasingly multicultural marketplaces. The globalization of markets and international competition require firms to operate in a multicultural environment. Other contributors to this change include migration patterns and global communication media, such as satellite television. These factors together are creating multicultural populations in domestic markets and exposing domestic consumers to alternative behaviors and wants (Douglas and Craig 1997).

The sociologist Arjun Appadurai (1990) has identified five global flows that are transforming, beyond national cultures, the natures of societies and muting the effects of divisions as well as barriers between them: Mediascapes, i.e., flows of images and communication, are the most far-reaching in terms of influencing consumers, and, at the same time, are subject to influence by marketers. Ethnoscapes, i.e., flows of tourists, migrants, international students, are also shaping beliefs and result in the direct exposure of members of one culture to another. Ideoscapes, i.e., flows of political ideas and ideologies, exert subtler influences that take more time to have any impact. Ethnoscapes and mediascapes are the conduits for the transmission of ideas and ideologies. The last two scapes—technoscapes, i.e., flows of technology and know-how or linkages between plants and offices worldwide, and finanscapes, i.e., flows of capital and money—are significant forces but less evident to individual consumers. In most cases, flows are outcomes of the desire to expand markets for goods and services. Technology and capital are critical factors for businesses as they

seek to expand around the globe. These flows are the primary mechanisms that transmit content from one culture to another.

## 2.2. Consequences of Cultural Dynamics

The dynamic nature of culture due to the factors mentioned above can cause dramatic changes in different cultures on a global scale. It will break down the geographical boundaries of culture and will essentially result in cultural changes. The changes can be in different forms; one of the likely changes is the adoption of Western culture, which is due to the fact that the Western part of the world is more advanced. This change is termed homogenization; therefore, there can be a tendency for people in developing nations to adopt Western culture. Another dimension of these changes is towards a hybrid culture, which will be a mix of elements of both cultures under contention (Hassi and Storti 2012). Some studies argue towards polarization, referring to the practice of holding on belligerently to the home culture (Bramson et al. 2017).

These cultural changes have been proven to be highly likely outcomes of globalization; members belonging to a culture are exposed to other practices, which may lead to adoptions, as suggested earlier.

Yoshihisa (2014) summed up the primary sources of cultural dynamics in four heads, viz. importation, invention, selection, and drift.

Importation, as the term suggests, refers to adopting practices from a foreign culture. In contrast, new cultural information can be adopted by a culture without necessarily importing from another foreign culture, which is termed invention. Selection refers to selecting cultural information or elements in order to reproduce or to be removed. Drift revolves around random processes that change cultural information over time.

## 2.3. Globalization and Cross-Cultural Economies

Culture has a profound influence on all aspects of human behavior. Its impact may be subtle or pronounced, direct or oblique, and enduring or ephemeral. It is so entwined with all facets of human existence that it is often difficult to determine how it impacts human behavior. Adding to the complexity of understanding the impact of culture is its inherently dynamic nature. Culture influences change and evolve as political, social, economic, and technological forces reshape the cultural landscape (Craig and Douglas 2006). Networks of interpersonal and mass communications have been expanding, spawned by the growth of satellite communication links, the Internet, and voice/data networks. These communications have altered traditionally static, territorial notions of culture (Crozet 2017) and resulted in more significant interchanges as well as linkages between cultural entities.

The movement of customers from their own cultural groupings to others in different countries is causing the transfer of interests, values, behaviors, etc. The transmission has further condensed the difference between two cultures (Andreasen 1990). The reduction in difference is an outcome of cultural interpenetration. Cultural interpenetration refers to the infiltration of elements of one culture into another. Cultural interpenetration reduces the distinctiveness between cultures, leading to difficulty in identifying the ethnic core of a culture (Craig and Douglas 2006).

## 2.4. Cultural Dynamics and Consumer Behaviour

Culture is among the key factors that influence consumer behavior. The environments in which consumers make decisions can be categorized broadly as internal and external: Internal factors include personal beliefs on religion, ethics, and faith. External factors can be explained as culture, social class, and group influence (Ghoshal 2016). It is a known fact that culture can impact consumers and their consumer behavior (Duesenberry 1949). The boundaries of culture are fluid and susceptible to changes. The fluid nature of culture is caused by both direct as well as indirect external influences. Direct external influences refer, in short, to a person at least temporarily entering another cultural context; in contrast, indirect external influences can result from exposure to other cultural contexts through

media. Cultural changes directly impact the formation of consumer tastes and preferences (Douglas and Craig 1997).

### 2.5. Cultural Dynamics in India

India opened up through liberalization, privatization, and globalization during the early 1990s. The opening up has led to social, economic, and cultural changes in society. The changes have occurred in multiple dimensions in different areas. There is undoubtedly contemporary Western economic development on one side; traditional ways of life have gained strength; and reflexive modernization is also evident (Pick and Dayaram 2006).

The changes in the culture of Indian consumers have been evident from the opening up of the economy. There has been migration from rural to urban locations, leading to a transformation from a joint family system to one of the nuclear family; there is also a higher degree of exposure to the outside world. Consumption patterns have changed, and previous studies have identified differences in beliefs between people living in cities and their parents residing in rural areas (Ghoshal 2016).

The consumer culture theory lists multiple areas of research for further enquiry, an essential aspect being the globalization of consumer culture and its impact on consumption in less developed economies or transitional economies (Arnould and Thompson 2005). The Indian economy's transition commenced from a closed one to an open one in 1991. During this period, the country faced a significant balance of payment crisis, leading to dependence on the IMF and World Bank for a bailout. The intervention of the IMF led to forced structural reform through reviewing the country's trade policy, allowing foreign investment, and removing trade restrictions (Joint Standing Committee on Foreign Affairs, Defence and Trade 1998). All of these measures transformed the country, which saw economic progress and better exposure to the outside world. Exposure to the outside world and migration from rural to urban markets, as mentioned earlier, led to the transformation of consumers.

### 2.6. Values of Gold the Commodity

Starr and Tran (2007), in a working paper, identified the various determinants of gold demand: The first was the ability of gold to work as a hedge against risk. The second was underdeveloped financial markets due to the level of growth of developing markets. The third point, more related to the second, was a lack of borrowing opportunities. The final point was the cultural meanings associated with gold. Another way of looking at this was brought out by Liu (2016), in which the author examined the determinants of gold consumption in emerging markets. The study identified three broad categories as influencers of gold demand: the disposable income of consumers, the environmental factors, and the perceived value of gold. The research classified the perceived value of gold into utilitarian, hedonic, and symbolic values. Utilitarian value refers to the capability of gold as a means of investment. Hedonic value, meanwhile, refers to the "appearance" benefits, referring to the consumption of gold in the form of jewelry. The last form of value is symbolic, which refers to the meanings associated with gold, or the cultural aspects of gold. Hence, the current researchers chose to analyze the perceptual changes towards the symbolic aspects of gold among customers of different cultures.

## 3. Methodology

The purpose of this study is to identify the changes in the perceptions of two generations of women (pre- and postliberalization generations) towards physical gold. The methodology has to be viewed from two dimensions: The first aspect here is to identify the elements of the perceptions towards the symbolic value of gold. The second facet is to identify the audience in order to capture the impact of cultural dynamics. India as an economy opened up in the early 1990s through liberalization, privatization, and globalization. Among other things, the boundaries opened up, leading to multiple flows that possibly caused cultural changes in the country. Multiple researchers have looked into the impact of

globalization on culture. [Olivier et al. \(2006\)](#) brought out one of the most robust studies on globalization, wherein they looked at the impact of globalization based on trade. The study produced two outcomes; the first one was that, whatever the form of trade, globalization would affect the cultural dynamics of local economies, and the second outcome of the study stated that countries that are net importers would witness cultural erosion.

### 3.1. Measuring Cultural Dynamics

Cultural dynamics can be seen from multiple perspectives and are measured in diverse ways. One of the methods that can be implemented to capture the change in transitional economies would be the cross-generational method. Cross-generational methods measure the cultural transition from parent to child by making both parts of the sample. This method, called vertical transmission, is commonly used ([Phalet and Schönflug 2001](#)). Studies in the past have reported that collectivist values are transmitted between generations more often than individual values are ([Schönflug 2001](#)); however, this only holds under stable conditions, while in the case of transitional economies it was identified that individualist values tend to be transmitted and collectivist values are not transmitted ([Boehnke 2001](#)). Another dimension of transmission that was recognized was the role of oblique and horizontal transmissions in cultural dynamics. [Boehnke et al. \(2007\)](#) identified that the role of horizontal and oblique transmissions tends to dominate vertical transmission when studied in the context of the zeitgeist in parent–child value similarities.

### 3.2. Participants and Procedure

Females tend to maintain closer ties with the commodity of gold than males do. The relationship that females hold with gold is special and unique ([Mehrotra 2004](#)); the right audience to speak on perceptions towards gold would be women. [Pathy et al. \(2021\)](#) attempted to identify the consumer decision roles in gold buying; the study identified that women dominate the decision roles in terms of gold buying.

In order to assess the impact of cultural dynamics, the population has to be represented by respondents impacted by the effects of globalization, as well as those who have not had an impact.

India went through the process of globalization in the early 1990s, and the country went through a drastic socioeconomic transformation during this time. The critical consideration, hence, while choosing the population is to have representations from both pre- and post-liberalization generations. A strong differentiation is critical to the success of the study.

Based on reading and discussions with experts, a second element was brought into the study, which was marriages, as most of these efforts revealed the significance of the relationship between marriage and gold ([Fernandez and Veer 2004](#)). The fundamental understanding at this stage was the impact of marriages on the perceptions of women; with the role that gold plays in marriages, the women that go through the process of marriage come out with different perceptions towards gold. Marriages take the perceptions towards gold beyond solely adornment, instead into the symbolic and utilitarian aspects of gold ([Ertimur and Sandikci 2005](#)). Hence, the classification was identified as women who became married before the impact of liberalization and those who became married afterwards. The averaged marriage age of women in India was considered in order to determine this; the average marriage age was identified as 22, and women born before 1976 as well as those born after 1976 were considered as the two sets of samples. The generation born in 1976 would be 20 by 1996 and become married; around 6–8 years is a good time within which the impact of opening up would have been felt in the environment.

Another key deliberation was the possibility of diversity among the two sets of customers due to elements such as income, religion, lifestyle, etc., that can impact perceptions; in order to neutralize this impact, the study adopted a generational dyad sampling method. Based on the generational dyad method, the researcher selected pairs of samples belonging to each of the generations from the same family ([van Gaalen et al. 2008](#)). In the present

context, each pair of respondents will include a female born before 1976 and her married daughter, who was born after 1976.

The authors collected data from 220 (110 pairs) respondents falling into the mentioned categories. The best possible sampling method for the present case is snowballing due to the specific nature of the population. The population is difficult to identify as the study uses a paired sampling method, with respondents falling into the conditions (both generations) from the same family. For a mother and a daughter, fitting the attributes mentioned earlier would be challenging to identify through the use of a probability sampling method. In such cases where there is difficulty in identifying the participants, snowballing is suggested, wherein participants identify the other participants in the study (Naderifar et al. 2017).

### 3.3. Sample Size Estimation

A pilot study was conducted from 20 pairs of samples (40 samples); the means as well as standard deviations of the attributes were identified and the sample size was estimated. The mean and standard deviation of the pilot data was worked out. The sample size was estimated through the use of the following equation:

$$(3.92 (SD^2)/(0.025(\text{mean})^2) \quad (1)$$

Of the estimated sample sizes for each of the attributes under study, the highest was considered. Thus, the sample size was estimated to be 206. The researcher collected data from 224 respondents. After editing and deleting incomplete forms there were a total of 220 samples or 110 generational dyads of respondents.

Craig and Douglas (2006), in their work, in the wake of the rapidly changing global environment, attempted to bring out a thorough understanding of cultural dynamism. They brought out three possible outcomes: cultural contamination, cultural pluralism, and hybridization. Cultural contamination refers to the changes in the natural development of a culture due to exposure to other societies (Ramesh and Bisht 2017). Cultural pluralism is essentially accepting and living in a diverse cultural context (Demangeot and Sankaran 2012). In hybridization, an element of culture blends into another through the modification of the element to fit cultural norms (Stockhammer 2014). Holton (2000), in his research, brought out three possible consequences of cultural dynamism: these possibilities were identified as homogenization, polarization, and hybridization. Homogenization refers to convergence towards a common culture (Sever 2018), followed by polarization, which is on the other extreme; that is, to hold on aggressively towards one's own culture (Bramson et al. 2017). At the same time, the hybridization thesis refers to an exchange of cultural elements from several sources or from other cultures to which one is exposed (Kraidy 2006). These three can be put into a single scale with homogenization and polarization on the extreme ends. Any outcome can fall into a spot on the scale.

### 3.4. Research Instrument—Symbolic Value of Gold

The study will measure the difference in the perceptions of customers belonging to both of the generations under the study towards the symbolic factor of gold. The components of the symbolic factors are listed below (Table 1).

As reported earlier, the adoption of a multidimensional scaling technique for the current study is proposed; it is a group of models where relationships between datasets can be visually depicted through the use of graphical representations or maps (Lewis-Beck et al. 2004). The core purpose of the multidimensional scaling technique is to construct an image of objects appearing as points on a map based on the perceived distances among a set of items (Popper and Heymann 1996). In other words, it is a technique where the differences between objects are proximities; these are similarities or dissimilarities. For similarities, larger values indicate that objects are nearer, whereas the opposite applies to dissimilarities (Krabbe 2017). Here, the components of symbolic factors of gold are used to identify the distance based on the association or disassociation that the respondent perceives with physical gold. For example, one of the components of the study is the sacred value of gold.

If a respondent feels that this is a feeling that he perceives closely with gold he would then mark 10, while if there is not any association perceived then 1 will be marked. Thus, the distance in the context depicts the perceived association.

**Table 1.** Symbolic values of gold.

Sacred value, gold during occasions, social functions, and gifts	(Ertimur and Sandikci 2005; Narayanan et al. 2017)
Luxury, Pride	(Gao et al. 2009; Han et al. 2010)
Signaling status	(Ertimur 2003)
Conformity to social norms	(Fernandez and Veer 2004)
Spiritual benefits, sacred value	(Kolenda 1984)
Purity, fortune, and positivity	(Jørgensen 2012)
Happiness, emotional, attachment, and the auspiciousness of the time	(Liu 2016)

#### 4. Results

##### 4.1. Model Fit Estimation—Pre-Liberalization Generation

There are two key indicators for identifying the model fit index in the multidimensional scaling technique, viz. the R-squared value and stress value. The RSQ, or R-squared, value speaks about the goodness of fit; a score close to one represents strong fit (Davison and Sireci 2000). Stress refers to the goodness-of-fit statistic. It shows the square root of the normalized squared inconsistencies between distances between points in the MDS plot, as well as the smoothed distances predicted from the dissimilarities. Stress diverges between 0 and 1, and values near 0 indicate a better fit. The stress value can also be explained as the badness of fit; the higher the value, the worse the fit (Sturrock and Rocha 2000).

The output of the model fit indices are presented (Table 2) first for the pre-liberalization generation, followed by the map, after which the stimulus coordinates table is presented. The stimulus coordinates table helps in identifying and profiling both dimensions.

**Table 2.** Model fit indices—pre-liberalization generation.

R-Squared Value	Stress
0.85065	0.18944

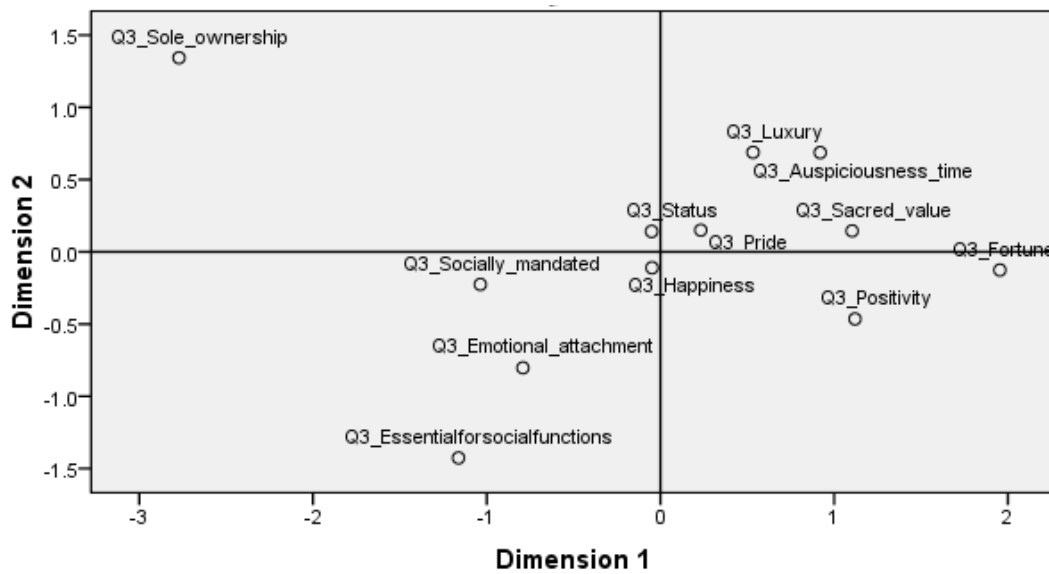
Source: data analysis.

The two values for identifying a model’s fit are the R-squared value and the stress value. The R-squared value is 0.85065, which indicates a very good fit (Malhotra and Dash 2015). The stress value, of 0.18944, indicates a good fit (Kruskal 1964).

##### 4.2. Perceptions of the Pre-Liberalization Generation

The Figure (Figure 1) represents a perceptual map of pre-liberalization-era respondents (elders) towards the symbolic values of gold. The above map displays the data spatially; the closer the attributes on the map, the more similar they are. The association between gold and each attribute perceived by the pre-liberalization generation is presented in the table above.





**Figure 1.** Mapping the perceptions of the pre-liberalization generation. Source: data analysis.

The first step is to identify either dimension of the map; this can be carried out on the basis of the positioning of the attributes in the map. The dimensions (Table 3) are the bases upon which the respondents identify associations or disassociations.

**Table 3.** Stimulus coordinates for pre-liberalization customers towards symbolic values.

SI No.	Attribute	Dimension 1	Dimension 2
1	Fortune	1.9353	−0.3026
2	Luxury	0.9289	0.4886
3	Sacred	0.9734	0.2322
4	Positivity	1.121	−0.3803
5	Pride	0.2128	0.0066
6	Socially mandated gift	−1.3107	−0.1485
7	Auspiciousness	0.8499	0.959
8	Essential for social functions	−1.3164	−1.5644
9	Sole ownership	−2.3056	1.5091
10	Happiness	−0.1463	−0.1399
11	Emotional attachment	−0.9414	−0.7252
12	Status	−0.0008	0.0653

Source: data analysis.

The dimensions were identified based on the attributes on extreme ends or loading towards a dimension. On the positive end of Dimension 1 attributes lies fortune, sacred value, and positivity loadings of 1.9353, 0.9734, and 1.121, respectively. In contrast, on the opposing end, sole ownership (−2.3056), socially mandated gift (−1.3107), and essential for social functions (−1.3164) are the attributes. These are primarily related to the mystical properties of gold (Behr 2010), “The Symbolic Nature of Gold in Magical and Religious Contexts”, beyond the material benefits, and hence the dimension has been profiled as spiritual benefits.

Dimension 2 has attributes such as the importance of the auspiciousness of the time at which gold is purchased as well as gold as an essential element of dressing for social functions. Emotional attachment towards the product and happiness in wearing gold lie on the negative side; these are related to more of a psychological feeling while wearing gold, profiled as psychological benefits.

4.3. Mapping the Perceptions of the Post-Liberalization Generation—Estimating the Model Fit

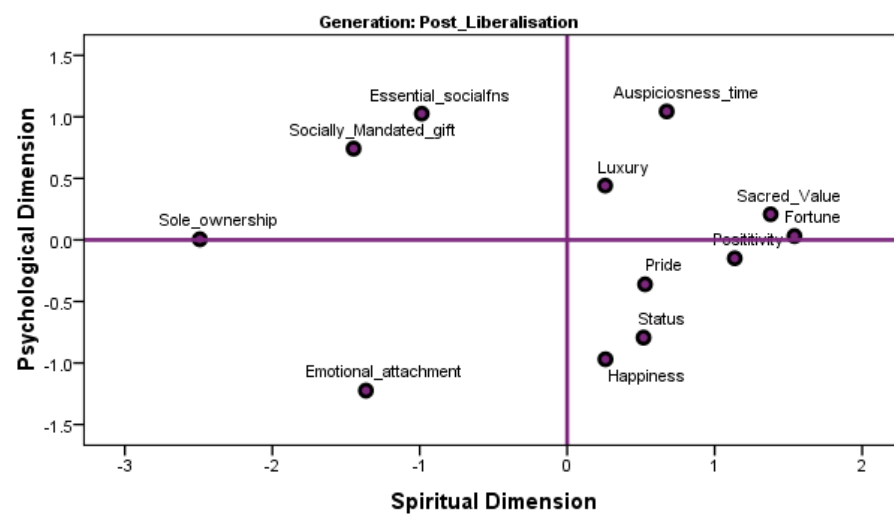
The outcomes of the post-liberalization generation are given below. The R-squared value is 0.91010, which indicates an excellent fit; the stress value, of 0.15690 (Table 4), shows a good fit as well.

**Table 4.** Model fit indices—symbolic factor—post-liberalization.

R-Squared Value	Stress
0.91010	0.15690

Source: data analysis.

Figure 2 is the perceptual map of the post-liberalization generation concerning the symbolic values of physical gold.



**Figure 2.** Mapping the perceptions of the post-liberalization generation. Source: data analysis.

The stimulus coordinates table can offer a better understanding of the dimensions based on positions in the map. The map exhibits the responses of the post-liberalization generation towards gold. The customers were asked about the association that each attribute has with gold—the higher the number (rating), the more prominent the association.

As observed in Table 5, attributes such as the wearing of gold bringing fortune (1.5411) and positivity (1.361) are positioned at the positive end of Dimension 1.

**Table 5.** Stimulus coordinates for the post-liberalization customers towards symbolic values.

SI No.	Attribute	Dimension 1	Dimension 2
1	Fortune	1.5411	0.0313
2	Luxury	0.2575	0.4412
3	Sacred	1.3792	0.2083
4	Positivity	1.136	−0.1491
5	Pride	0.5281	−0.3611
6	Socially mandated gift	−1.4491	0.742
7	Auspiciousness	0.6743	1.0438
8	Essential for social functions	−0.9871	1.0257
9	Sole ownership	−2.4915	0.0052
10	Happiness	0.2592	−0.9692
11	Emotional attachment	−1.3652	−1.2243
12	Status	0.5173	−0.7938

Source: data analysis.

Moreover, on the negative extreme are attributes such as sole ownership, essential for social functions, emotional attachment, and socially mandated gift. These are related to spiritual values, and are hence profiled as spiritual benefits.

Dimension 2 has attributes such as sole ownership and the auspiciousness of the time at the extreme positive end. Essential for social functions and emotional attachment are positioned at the opposing end; these again are related to the psychological values of gold; hence the dimension has been profiled as psychological benefits.

### 5. Discussion

A comparison of the maps of both generations can bring out the cultural changes, as the older generation amongst the group represents the pre-liberalization period, and the younger the post-liberalization phase. The maps of both of the generations are presented together to enable comparisons. The comparison would look at the equivalences and variances between the perception of both generations.

#### 5.1. Points of Equivalence

It has been identified (Figure 3) that both of the dimensions are identical for customers belonging to both generations; there is also a similarity in the positioning of most attributes on the map.

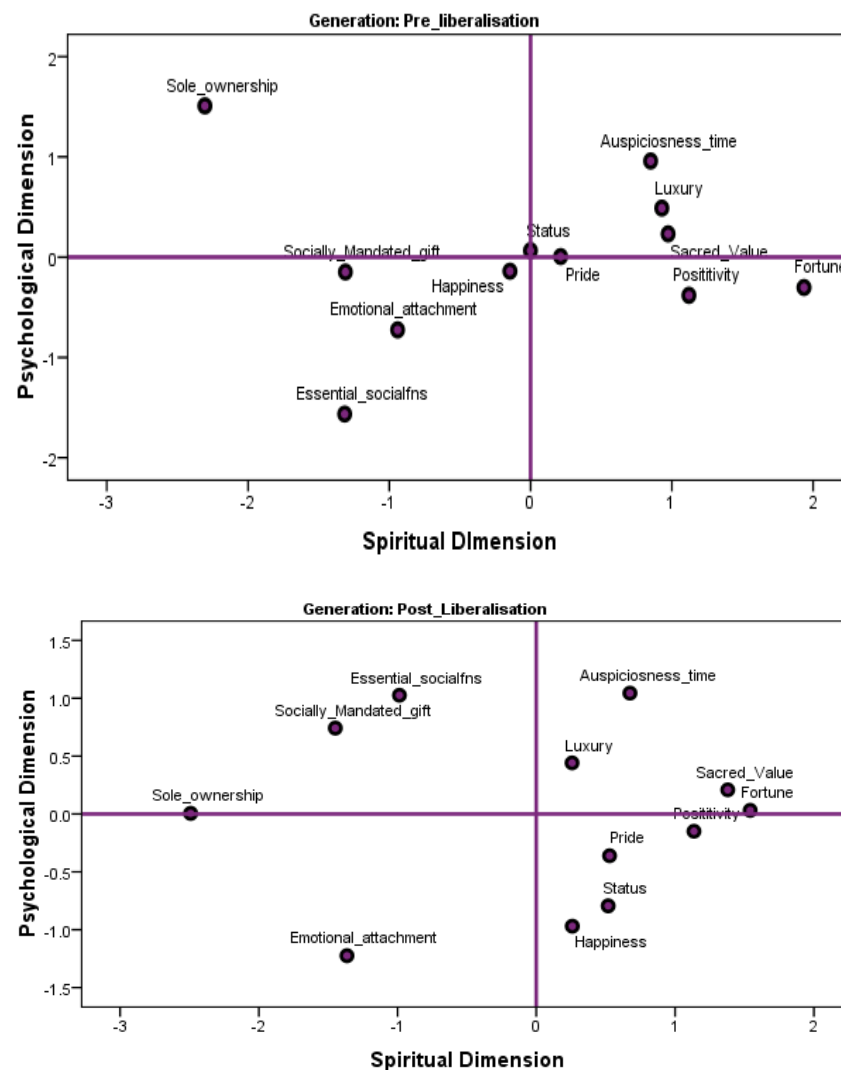


Figure 3. Comparing the perceptions of the pre- and post-liberalization generations.

The impact of cultural dynamics is limited in terms of the symbolic aspects of gold; the perceptions at a glance seem to be very similar among both generations. For instance, the auspiciousness of the time, luxury, sacred value, fortune, etc., are positioned similarly in both of the maps. Pride and status, though in different quadrants, are in close proximity in both of the maps. This positioning means that there is no change with regard to these values, particularly values such as the auspiciousness of the time, luxury, sacred value, and fortune. Three of the four identified values address the spiritual meanings associated with gold. Behr (2010) researched the different meanings that gold adopts and explained the use of gold in religious contexts. Gold has long been used in spiritual/ religious contexts, both in pre-Christian and Christian religions. The commodity's features make it an appropriate material with which to address God. The findings of this study reinstate this universal nature of gold; the perceptions towards the spiritual dimension of gold are intact across the two generations.

### 5.2. Points of Variance

This part of the discussion will look at the differences, which can reveal the direction of the cultural changes. An interesting difference is in the perceptions towards the attribute of essential for social functions, while the older generation has a low perception towards gold as being essential for social functions in both the psychological and spiritual dimensions. This value can be associated with a more psychological context as it has a personal influences to it. In the younger generation's map, the attribute is high in the psychological dimension. This difference is one space where a change in beliefs is evident, and this can work as a signal of cultural changes. The exciting part of this identification is that the direction of changes in beliefs regarding a commodity such as gold is more towards polarization. Schoenberger (2011) brought out the different contexts of gold gifting as an indicator of the statuses of the giver and receiver. The study identifies this value as gaining in strength. The fact that the youngsters perceive this more than the elders points towards cultural polarization. Another observation that points to the polarization argument is that the elders found happiness in owning gold as low in both dimensions; at the same time, the younger generation places happiness highly in the spiritual dimension.

Another attribute, sole ownership, was considered high in the psychological dimension by the elders, while this was low for the youngsters. Sole ownership refers to considering the commodity as the asset of an individual or a group (a family); interestingly, the youngsters do not consider themselves as having sole ownership of the gold that they possess.

The above are a few evident deviations between the attribute positionings in the two maps. To sum up, the symbolic beliefs associated with gold have only grown stronger among the post-liberalization generation. All of these add to the polarization argument.

A. Bramson et al. (2017) explain a polarized group as being one that displays little diversity of opinion or narrow bands of opinion. Nora Seni (2013) explains the polarization in a society that is changing culturally; their work reveals the duality in cultural supply as private and public, in which public refers to the beliefs of the foreign society. Jackson (2004) takes one step further in their explanation: when elements from different cultures becomes part of a society, the adoption tends to become indigenized. As explained in the case of the consumption of McDonald's, while the brand remains an icon of globalization, the consumption is still different in different cultural contexts (Sengupta 2001). This explanation clarifies the point of indigenizing a practice.

## 6. Theoretical Implications of and Scope for Further Research

The results of this study extend those of studies conducted in the past that attempted to identify the price elasticity of gold demand. The demand for gold in India has been persistent despite high prices, which is a consequence of socioeconomic factors (Kanjilal and Ghosh 2014). The present study, which investigated the cultural dimensions of gold

demand, identified that the cultural affiliation is here to stay. The study revealed that the perceptions remained despite generational changes, globalization, and cultural dynamics.

However, the scope of the study, as mentioned above, was limited to just one of the three determinants of gold demand. A similar study with these determinants will result in a more comprehensive outcome. The other values, such as utilitarianism and hedonism, that gold offers (Liu 2016) need to be examined, as the fundamental purposes of hedonic consumption, symbolic consumption, and utilitarian consumption are different from each other (Saltk et al. 2013). The above being the case, there is a need for a similar study to identify the differences in the perceptions towards these two values.

## 7. Practical Implications

The outcomes of the present study reiterate the gold obsession of Indians, at least from a symbolic perspective. The cultural prominence of gold in Indian society, according to the aforementioned outcomes, is only growing; however, a comprehensive picture of consumer behavior towards the commodity can be obtained only after identifying the perceptual differences towards the other two factors (hedonic and utilitarian) affecting gold demand.

The outcome has direct implications on two parties: one is the government as well as regulators, and the other is the gold jewelry as well as gold loan industries.

### 7.1. Government's Perspective

Immanuvel and Lazar (2021), in a comparison between the largest gold-consuming countries, identified the distinctive demand pattern for gold in India. Their study showed that more than 70% of India's gold demand is unaffected by price fluctuations. The growing demand will add to the import as well as balance of payments pressures, and hence the need for regulation. Disseminating and refining the gold monetization scheme, as mentioned in the study cited above, would help curb gold imports.

### 7.2. Industry's Perspective

The gold jewelry industry will cherish this study's findings, while the perceptions towards other dimensions will help them identify their ways forward. Another critical industry is the gold loan industry. One of the key reasons for the growth of the gold loan industry is the emotional attachment that people in the culture have to gold (Maruthur 2021). This study's findings about the firm cultural significance of gold will ensure that the emotional attachment remains, which helps gold loan providers. The marketing communications of the gold loan industry can focus on the cultural associations that consumers hold with gold while communicating the value that it can offer.

## 8. Conclusions

The changes in the patterns of gold consumption are critical to any economy, and particularly those of Asia due to the large consumption of gold. Asian markets account for almost 70% of the total global gold demand (O'Connor et al. 2015). Starr and Tran (2007), while assessing the income elasticity of gold, identified that, in developing markets, the demand for gold tends to rise with a fall in income; this is a precautionary move. This move will also mean that the development of credit markets can adversely affect the demand for gold. Gold the commodity has far-reaching implications on the economies of countries. For instance, in India, gold, by way of employment generation and foreign exchange, contributed more than USD 30 billion to the economy as of 2015. The gems and jewelry sector accounts for around 7 per cent of the country's GDP and forms 15.71% of total merchandise exports; however, on the flip side, the country's gold mining is limited, which means that the dependence on imports for gold is there to stay. The demand side in the other primary Asian market, that of China, is similar; however (ET online 2018), the gold mining scenario in China is in stark contrast to the Indian scenario. The Chinese mining industry is one of the largest in the world, with influence in both domestic and foreign markets. Apart from this, China also has enormous potential in terms of unmined

gold reserves; these are deep and are growing. China has been the largest producer of gold for more than a decade (Yongtao 2018). This setting will mean that the implications for China can be on both the supply side as well as the demand side.

Similarly, gold has implications for the macroeconomic policies of a country (Kannan and Dhal 2008); for a market such as India, there are several distinctive features of gold demand. The country depends on imports to meet almost all of its gold demand. Since the demand for gold is driven by cultural factors and is often seen as a source of saving or investment, these peculiarities in demand would mean that gold can impact inclusive growth (Mohan 2006). Similarly, in China—a market that supplies and consumes large quantities of gold—the government changed their policy in order to encourage the importing of gold, leading to a surge in demand (Reuters 2021).

The distinct pattern of the demand for gold, as explained, is due to culture and cultural changes. Such changes in gold demand patterns can have far-reaching economic implications; therefore, it is indispensable for progress to keep track of the changes in the direction and composition of the demand for physical gold. There are several studies that look to analyze gold as an investment; however, studies that look at the demand and consumption patterns of physical gold are very limited. It is therefore critical to conduct studies across major gold consumer markets across the globe to identify the changes in gold consumption patterns. The present study is one such initial step towards looking at one of the three critical values associated with gold, undertaken in India, which is among the largest consumers of gold. Furthermore, other values, such as those of a hedonic and utilitarian nature, need to be studied in India, and the same can be applied across significant gold-consuming countries to identify gold consumption patterns.

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## References

- Andreasen, Alan R. 1990. Cultural Interpenetration: A Critical Consumer Research Issue for the 1990S. *Advances in Consumer Research* 17: 847–49.
- Appadurai, Arjun. 1986. Introduction: Commodities and Politics of value. In *Social Life of Things: Commodities in Cultural Perspecti*. New York: Cambridge University Press, pp. 3–63.
- Appadurai, Arjun. 1990. Disjuncture and Difference in the Global Cultural Economy. *Theory, Culture & Society* 7: 295–310.
- Arnould, Eric J., and Craig J. Thompson. 2005. Consumer Culture Theory (CCT): Twenty Years of Research. *Journal of Consumer Research* 31: 868–82. [CrossRef]
- Behr, Charlotte. 2010. The Symbolic Nature of Gold in Magical and Religious Contexts. *Staffordshire Hoard Symposium*. Portable Antiquities Scheme. Available online: <http://finds.org.uk/staffshoardsymposium/papers/charlottebehr> (accessed on 26 March 2023).
- Boehnke, K. 2001. Parent-Offspring Value Transmission in a Societal Context: Suggestions for a Utopian Research Design—With Empirical Underpinnings. *Journal of Cross-Cultural Psychology* 32: 240–55. [CrossRef]
- Boehnke, Klaus, Andreas Hadjar, and Dirk Baier. 2007. Parent-Child Value Similarity: The Role of Zeitgeist. *Journal of Marriage and Family* 69: 778–92. [CrossRef]
- Bramson, Aaron, Patrick Grim, Daniel Singer, William J. Berger, Graham Sack, Steven Fisher, and Bennett Holman. 2017. Understanding polarization: Meanings, measures, and model evaluation. *Philosophy of Science* 84: 115–59. [CrossRef]
- Business Standard. 2021. Gold imports up by 22.58% to \$34.6 billion in 2020–21, CAD takes a beating. *Business Standard*; New Delhi, April 18. Available online: [https://www.business-standard.com/article/markets/gold-imports-up-by-22-58-to-34-6-billion-in-2020-21-cad-takes-a-beating-121041800222\\_1.html](https://www.business-standard.com/article/markets/gold-imports-up-by-22-58-to-34-6-billion-in-2020-21-cad-takes-a-beating-121041800222_1.html) (accessed on 2 February 2023).

- Corner, John. 1991. Studying culture: Reflections and assessments. An interview with Richard Hoggart. *Media, Culture & Society* 13: 137–51.
- Craig, C. Samuel, and Susan P. Douglas. 2006. Beyond national culture: Implications of cultural dynamics for consumer research. *International Marketing Review* 23: 322–42. [[CrossRef](#)]
- Crozet, Chantal. 2017. Globalization and Culture. In *Global Encyclopedia of Public Administration, Public Policy, and Governance*. New York: Springer, pp. 1–8.
- Davison, Mark L., and Sireci G. Sireci. 2000. Multidimensional Scaling. In *Handbook of Applied Multivariate Statistics and Mathematical Modeling*. Edited by Howard E. A. Tinsley and Steven D. Brown. Amsterdam: Elsevier and Academic Press, pp. 323–52. [[CrossRef](#)]
- Demangeot, Catherine, and Kizhekepat Sankaran. 2012. Cultural pluralism: Uncovering consumption patterns in a multi-cultural environment. *Journal of Marketing Management* 28: 760–83. [[CrossRef](#)]
- Douglas, Susan P., and C. Samuel Craig. 1997. The changing dynamic of consumer behavior: Implications for cross-cultural research. *International Journal of Research in Marketing* 14: 379–95. [[CrossRef](#)]
- Duesenberry, James Stemble. 1949. Income, Saving, and the Theory of Consumer Behaviour. *The Economic Journal* 61: 128–34.
- Ertimur, Burçak. 2003. *Gold and Gold Jewelry: Exploration of Consumer*. Ankara: The Institute of Economics and Social Sciences.
- Ertimur, Burçak, and Ozlem Sandikci. 2005. Giving Gold Jewelry and Coins As Gifts: The Interplay of Utilitarianism and Symbolism. *Advances in Consumer Research* 32: 322–27.
- Economic Times online. 2018. How does gold impact the economy? *The Economic Times*, October 15.
- Economic Times. 2021. China opens its borders to multi-billion dollar gold imports: Sources. *The Economic Times*, April 16.
- Fernandez, Karen V., and Ekant Veer. 2004. The Gold That Binds: The Ritualistic Use of Jewelry in a Hindu Wedding. *Advances in Consumer Research* 31: 31–55.
- Gao, Ling, Marjorie J. T. Norton, Zhiming Zhang, and Chester Kinman To. 2009. Potential niche markets for luxury fashion goods in China. *Journal of Fashion Marketing and Management* 13: 514–26. [[CrossRef](#)]
- Ghoshal, Taposh. 2016. Impact of Culture on Indian Consumers: An Exploratory Study. In *Looking Forward, Looking Back: Drawing on the Past to Shape the Future of Marketing*. Edited by Colin Campbell and Junzhao (Jonathon) Ma. Berlin: Springer, pp. 897–905.
- Han, Young Jee, Joseph C. Nunes, and Xavier Drèze. 2010. Signaling Status with Luxury Goods: The Role of Brand Prominence. *Journal of Marketing* 74: 15–30. [[CrossRef](#)]
- Hassi, Abderrahman, and Giovanna Storti. 2012. Globalization and Culture: The Three H Scenarios. In *Globalization—Approaches to Diversity*. Edited by Hector Cuadra-Montiel. Rijeka: InTech, pp. 3–20.
- Holton, Robert. 2000. Globalization's Cultural Consequences. *The ANNALS of the American Academy of Political and Social Science* 570: 140–52. [[CrossRef](#)]
- Immanuvel, S. Maria, and D. Lazar. 2021. Elasticities of Gold Demand—An Empirical Analysis Using Cointegration and Error Correction Model. *Arthaniti: Journal of Economic Theory and Practice* 20: 131–42. [[CrossRef](#)]
- Jackson, Peter. 2004. Local Consumption Cultures in a Globalizing World. *Transactions of the Institute of British Geographers* 29: 165–78. [[CrossRef](#)]
- Joint Standing Committee on Foreign Affairs, Defence and Trade. 1998. *Completed Inquiry: Australia's Trade Relationship with India*. Canberra: House of Representatives Committees.
- Jørgensen, Jonas A. 2012. Golden Moments: The Role of Jewellery in South Indian Pentecostalism. *Journal of Anthropology* 77: 518–34.
- Kanjilal, Kakali, and Sajal Ghosh. 2014. Income and price elasticity of gold import demand in India: Empirical evidence from threshold and ARDL bounds test cointegration. *Resources Policy* 41: 135–42. [[CrossRef](#)]
- Kannan, R., and Sarat Dhal. 2008. India's demand for gold: Some issues for economic development and macroeconomic policy. *Indian Journal of Economics & Business* 7: 107–28.
- Kolenda, Pauline. 1984. Woman as tribute, Woman as flower: Images of "Woman" in weddings in north and south India. *Journal of the American Ethnological Society* 11: 98–117. [[CrossRef](#)]
- Krabbe, Paul F. 2017. New Developments. In *The Measurement of Health and Health Status*. Edited by Paul F. Krabbe. Cambridge: Academic Press, pp. 309–31.
- Kraidy, Marwan M. 2006. Hybridity in Cultural Globalization. *Communication Theory* 12: 316–39. [[CrossRef](#)]
- Kruskal, Joseph Bernard. 1964. Multidimensional scaling by optimizing goodness of fit to a nonmetric hypothesis. *Psychometrika* 29: 1–27. [[CrossRef](#)]
- Lewis-Beck, Michael S., Alan Bryman, and Tim Futing Liao. 2004. Multidimensional Scaling. In *The SAGE Encyclopedia of Social Science Research Methods*. Edited by M. Lewis-Beck, A. Bryman and T. Liao. Thousand Oaks: Sage Publications. [[CrossRef](#)]
- Liu, Jingting. 2016. Covered in Gold: Examining gold consumption by middle class consumers in emerging markets. *International Business Review* 25: 739–47. [[CrossRef](#)]
- Malhotra, Naresh K., and S. Dash. 2015. *Marketing Research*. New Delhi: Pearson.
- Maruthur, Sumeetha Mokkil. 2021. The Growth of Gold Loan Market in India: A Case study of Kerala. In *Gold and Gold Markets*. Ahmedabad: India Gold Policy Centre.
- Mehrotra, Nilika. 2004. Gold and Gender in India: Some Observations from South Orissa. *Indian Anthropologist* 34: 27–39.
- Mohan, Rakesh. 2006. *Inclusive Growth and Financial Inclusion*. Hyderabad: Reserve Bank of India, November 3.

- Naderifar, Mahin, Hamideh Goli, and Fereshteh Ghaljaei. 2017. Snowball Sampling: A Purposeful Method of Sampling in Qualitative Research. *Strides in Development of Medical Education* 14: e67670. [CrossRef]
- Narayanan, Priya, Balagopal Gopalakrishnan, and Arvind Sahay. 2017. *Gold Monetization in India as a Transformative Policy: A Mixed Method Analysis*. Ahmedabad: IIM-A.
- O'Connor, Fergal A., Brian M. Lucey, Jonathan A. Batten, and Dirk Baur. 2015. The Financial Economics of Gold—A Survey. *International Review of Financial Analysis* 41: 186–205. [CrossRef]
- Olivier, Jacques, Mathias Thoenig, and Thierry Verdier. 2006. Globalization and The Dynamics of Cultural Identity. *Journal of International Economics* 76: 356–70. [CrossRef]
- Pathy, Girish S., Hareesh N. Ramanathan, and Easwaran Iyer. 2021. Measurement of Buying Roles in Family Decision-making Process for Gold Jewellery Using Correspondence Analysis. *PalArch's Journal of Archaeology of Egypt/Egyptology* 18: 126–46.
- Phalet, Karen, and Ute Schönplflug. 2001. Intergenerational Transmission of Collectivism and Achievement Values in Two Acculturation Contexts: The Case of Turkish Families in Germany and Turkish and Moroccan Families in the Netherlands. *Journal of Cross-Cultural Psychology* 32: 186–201. [CrossRef]
- Pick, David, and Kantha Dayaram. 2006. Globalisation, reflexive modernisation, and development: The case of India. *Society and Business Review* 1: 171–83. [CrossRef]
- Pines, Lawrence. 2021. India's Economy: What Foreign Trade Figures Reveal about It [Import and Export Lists]. Available online: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1891626> (accessed on 20 March 2023).
- Popper, Richard, and Hildegard Heymann. 1996. Multivariate analysis of data in sensory science. In *Data Handling in Science and Technology*. Edited by Tormod Naes and Einar Risvik. Amsterdam: Elsevier, Vol. 16, pp. 159–84.
- PWC. 2013. *The Direct Economic Impact of Gold*. London: World Gold Council. Available online: [https://www.gold.org/sites/default/files/documents/PWC\\_direct\\_economic\\_impact\\_of\\_gold.pdf](https://www.gold.org/sites/default/files/documents/PWC_direct_economic_impact_of_gold.pdf) (accessed on 20 March 2023).
- Raikhan, Sadykova S., Myrzabekov Moldakhmet, Myrzabekov Ryskeldy, and Moldakhmetkyzy Alua. 2014. The interaction of globalization and culture in the modern world. *Procedia—Social and Behavioral Sciences* 122: 8–12. [CrossRef]
- Ramesh, Priyanka, and Priyanka Bisht. 2017. Cultural Contamination in The Era of Media Divergence. *Journal of Advanced Research in Journalism & Mass Communication* 4: 10–13.
- Reuters. 2021. China Opens Its Borders to Billions of Dollars of Gold Imports. Money Control. Available online: <https://www.moneycontrol.com/news/business/commodities/china-opens-its-borders-to-billions-of-dollars-of-gold-imports-6780441.html> (accessed on 29 December 2022).
- Ritzer, George. 2007. The Globalization of Nothing 2. *SAIS Review of International Affairs* 23: 189–200.
- Saltık, Işıl Arıkan, Aytakin Firat, Kemal Yüce Kutucuoğlu, and Özgür Tunçel. 2013. Consumption, consumer culture and consumer society. *Journal of Community Positive Practices* XIII: 182–203.
- Schoenberger, Erica. 2011. Why is gold valuable? Nature, social power and the value of things. *Cultural Geographies* 18: 3–24. [CrossRef]
- Schonplflug, Ute. 2001. Intergenerational Transmission of Values: The Role of Transmission Belts. *Journal of Cross-Cultural Psychology* 32: 174–85. [CrossRef]
- Sengupta, Chandan. 2001. Conceptualising Globalisation: Issues and Implications. *Economic and Political Weekly* 36: 3137–43.
- Seni, Nora. 2013. Polarization in a Culturally Changing Society. *Hérodote* 36: 122–37. [CrossRef]
- Sever, Mustafa. 2018. Consumption Culture and Homogenisation in the Globalisation Process. *ZfWT* 10: 300–7.
- Starr, Martha, and Ky Tran. 2007. Determinants of the Physical Demand for Gold: Evidence from Panel Data. *World Economy* 31: 416–36. [CrossRef]
- Stockhammer, Philipp Wolfgang. 2014. *Conceptualizing Cultural: A Transdisciplinary Approach*. Heidelberg/Berlin, Dordrecht, London and New York: Springer.
- Sturrock, Kenneth, and Jorge Rocha. 2000. A Multidimensional Scaling Stress Evaluation Table. *Field Methods* 12: 49–60. [CrossRef]
- Sussman, Nan M. 2000. The Dynamic Nature of Cultural Identity Throughout Cultural Transitions: Why Home Is Not So Sweet. *Personality and Social Psychology* 4: 355–73. [CrossRef]
- van Gaalen, Ruben, Pearl A. Dykstra, and Henk Flap. 2008. Intergenerational contact beyond the dyad: The role of the sibling network. *European Journal of Ageing* 5: 19–29. [CrossRef]
- Venkatesh, Alladi. 1994. India's Changing Consumer Economy: A Cultural Perspective. *Advances in Consumer Research* 21: 323–28.
- Yongtao, Zhao. 2018. *Gold Investor, October 2018*. London: World Gold Council. Available online: <https://www.gold.org/goldhub/research/gold-investor/gold-investor-july-2018/13231> (accessed on 12 December 2022).
- Yoshihisa, Kashima. 2014. How can you capture cultural dynamics? *Frontiers in Psychology* 5: 995.

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