

A Case Study of the Effects of Superstitions and Beliefs on Mali Socioeconomic Development

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Abstract

Malian people are very superstitious, although 90% of the population is Muslim and 5% Christian, the superstitions in this country usually are a part of everyday life. Malian superstitions are related to sorcery, fetichism¹, maraboutism² etc and refers to the belief in an object to have supernatural powers or in particular, a artificial object that has power over others such as komo³, wara⁴, n'kougéré⁵ or worship of rivers, trees and mountains. It is often interpreted as caused by the jealousy, nastiness, egocentricity of a third party who has accomplished bad things from one person to another. Close to surreal, these superstitions are central of many economic and social discussions; many Malians think that superstitions may help to avoid many risks such as health care, and could occur problems which are unrecognized or illegal according to Mali law.

This paper investigates the factors which determine superstitions, the role it could play economically and socially in Mali, reporting some preliminary empirical results by demonstrating performance benefits of superstitions and identifying their underlying mental processes particularly to Sénoufo and Dogon people from Sikasso and Badiangara.

Keywords: superstitions; effects; beliefs; society; irrational; worship; cowries

1. Introduction

At the end of the 20th century, though science has managed to explain reasonably events that for a long time were considered to be part of the metaphysical domain. Mali for its part still remains fastened to certain beliefs.

According to the dictionary, superstitions are simply the belief in supernatural elements: that one event leads to the cause of another without any physical process linking the two events: essentially astrology, presage, witchcraft, charlatanism etc that contradicts natural science; from komo rituals to jinni myths, clairvoyant cowries or magic pestle. Most of us are familiar with some form of superstitious belief or practice, tend to be based on belief systems which cannot be empirically proved.

Islam or Christianity can become a practice in all things superstitious when Muslim and Christians do things with the goal of manipulating God into performing some miracle or favor. The line between religion and superstition is a fine one, but when rational faith becomes blind manipulation by using control tactics, the religion has lapsed into superstition⁶.

Many superstitions basically stem from a fear of spirits of the dead or of spirits of any sort. Things are interpreted as attempts by these spirits to contact the living with a threat, a warning, or a blessing they are connected to religion; for instance, if a person wears a Bakan⁷, he could be spared from the devil, witchcraft or magic. Certain amulets fixed or tied in front of houses have to wear off evil or bring good luck or happiness. Many Malians in nearly all times have held seriously irrational beliefs concerning methods of wearing off ill or bringing good, foretelling the future and healing or preventing sickness or accident.

Should we believe in superstitions?

If we think that our antagonist or our rival can pay a sorcerer with the intent of killing us or causing a tragedy in our life, why won't we believe these superstitions?

This article does not seek to completely condemn superstitions. Certain superstitious beliefs in Mali are perceived to promote economic development, for instance, damnation which forbids Bozo⁸ from fishing on Thursday; Sénoufo hunters from hunting Tji⁹ contribute to the growth of fish and wild animals stocks. Foretelling

¹Fetichism in anthropology refers to *the primitive belief that godly powers can inhere in inanimate things (e.g., in totems).*

²Support for marabous (Muslim holy men or mystics).

³Komo is a socio-religious institution (initiation) of the Malinke and Bambara, as well as of their Kagoro relatives. It has been adopted by the Fulani of Wassoulou, Manding, Fouladougou and Birgo, and exists among the ethnics groups of Bougouni. Komo is also practised by the Minianka and Senoufo ethnics groups of San, Koutiala and Sikasso

⁴Wara is a secret initiation society of the Bambara (Bamana) ethnic group

⁵n 'kougéré is a worship fetish

⁶Pitlane Magazine, Belief in Superstitions and their Effect on our Lives, © 2016 Pitlane Magazine

<http://www.pitlanemagazine.com/cultures/belief-in-superstitions-and-their-effect-on-our-lives.html>

⁷mystic belt use by Malian, Senegalese and many African to protect themselves against any bad sort

⁸The Bozos are a West African ethnic group located predominantly along the Niger River in Mali. They are famous for their fishing and are occasionally referred to as the "masters of the river".

⁹Tji is sacred day for senufo and minianka people in Mali, Burkina and Ivory Coast, it's each day a week, during this

the future through cowries remains a popular feature of Malians, guiding them and frequently focusing on the optimal times to make or avoid key economic and social decisions and affairs such as horoscope in western countries. Superstitions have been assimilated so profoundly into our social construction that it has been accepted into every side of society, literally, there is social and economic acceptance of superstition.

2. Provenance and reasons of superstitions in Mali

Mali is the home of many cultures with more than fifteen ethnics groups and languages. Although no single set of beliefs and superstitions unites this diverse population, different cultural groups and regions share some common elements such as Sénoufo, Minianka, Samogo and Tagana in Sikasso, Koutiala, and Kadiolo. In Mali the superstitions of many ethnics groups are carefully preserved remains of primitive times. Malian beliefs and superstitions are still a meaningful part of everyday life. Before the modern era, Malians had relatively little contact with the rest of the world, Islam entered Mali through Tombouctou very slowly and Christian missionaries were not very active there until the 1800s. Since then, the spread of Islam and Christianity has weakened the indigenous religions, beliefs, and superstitions of Mali. However, the traditional beliefs have not disappeared, so that a Malian Muslim or Christian might combine Islam or Christianity with the traditional practice of ancestors worship such as sacrifice a black, red cock or sacrifice a happy, sad kola nut for success or to avoid a peril.

Superstitions originated perhaps, when a man was at the mercy of the natural elements. He respected and worshiped the forces of nature like the sun, the moon, water etc. He worshiped fire because of its destructive ability. When man started falling prey to diseases he started appeasing the gods with offerings, penances and sacrifices to wear off evil spirits¹.

Most Malian traditional religions have multiple gods; nearly every culture recognizes a supreme God, all influential creators who are usually associated with the sky. Various ethnics groups of Mali such as Sénoufo and minianka refer to the highest god as “Kilè” or “Klè”, while dogon use the name “Ama”

In Mali, the persons who have irrational beliefs think that if you don’t believe the gris-gris, you will be remedied by the gris-gris. In many communities, since childhood, people get accustomed to superstitious activities, they are influenced by their fathers, ancestors or those close to them. In the villages people are, farmers hunters, anglers or breeders; they work in a countryside they don’t control, consequently so they are obliged to square with the nature spirit.

While the modern world has removed many of the dangers faced by previous generations, the fundamental human concerns about health, relationships and fortunes remain². The origin of superstition may be ignorance and illiteracy when it is replaced by a false belief.

Human beings in their primitive quest to explain and understand nature, to explain and understand their experiences, came up with the idea of magic, magical thinking, mystical forces and magical causes and explanation of phenomena to fill in the void created by fear and ignorance³. People in Mali invented witches, wizards, spirits, gods, djinns, demons, sacred mountains and other mystical entities which they imagined being responsible for their problems and predicaments, for the evil and misfortune they encountered in life. In Mali, most people believe witches can turn into any nocturnal animals, birds or insects particularly black cats, snakes, hyenas, bats or owls, so when people see such animals or birds particularly at night or in strange dark corners they tend to think they are sorcerers on a mission, a mission to kill, destroy or harm. In Mali wizards do not target only human beings; they also target wild life such as animals, insects and trees, mostly lightning and koroti⁴ are tested on trees before used to harm people. Some people in Mali believe that sorcerers travel at night in magic planes; other people believe that witches travel to eat the flesh and souls of people or drink their blood.

Traditionally, Malians attribute anything they do not understand or do not want to understand about witchcraft. For example any incident or occurrence they cannot explain. In Mali, nothing in life happens ordinarily, no one dies without his or her death having been caused by another through some doubtful means. Accidents are never attributed to faults or incompetence of the people in charge or machine failure, they are always orchestrated by certain superstitious powers.

3. Review of literature

Superstition is a belief or a practice that is not based on facts or events that can prove (Kagan, 2012) and can be divided into three types: religious, cultural and personal. In Mali, beliefs, religion and traditional medicine have historically gone hand in hand, but increasingly these elements have come into conflict with modern health care

day ,farm or bush activities are forbidden

¹HubPages, Common Superstitions and Indian Superstitious beliefs, Religion »Eastern, February 8, 2014

²Jane Warren ,Superstitions we swear by, Express, Home of the daily and Sunday express, Fri, Mar 28, 2014

³Leo Igwe, Belief in Witchcraft in Africa, Butterflies and Wheels, Aug 19th, 2011

⁴Mystic missile send by a witchcraft to kill or harm someone

which is secular in nature and more heavily challenged. In 2014 Many African including some Malians believes that Ebola is contracted through a curse, or in some cases, that it is a white man's creation. In his article on Medicine and Belief in Africa, Alain Epelboin said that in Senegal, many men do not want to choose gynecology because the system of African sorcery thinks that looking at a woman's sex is madness. Quy-Toan and Phung, Tung Duc the co-author of "Superstition, Family Planning, and Human Development" examines fertility decisions made in Vietnam between 1976 and 1996. The authors found that birth cohorts in auspicious years are significantly larger than in other years. Children born in auspicious years moreover do better both in health and education.

Superstitions, truly or incorrectly, can change a variety of human behaviors and can also change the allocation of economic resources; but if superstitious beliefs become too extreme, they can also become risky.

Beck and Miller (2001) found a correlation between a high degree of religiosity and higher levels of belief in the supernatural. They also found that participants high in religiosity who had also encountered an emotionally negative experience in the past year decreased in their degree of supernatural belief. Their study suggests that there is a correlation between religiosity and superstitious belief when combined with life experiences.

Belief in bad luck such as unlucky numbers or occurrences (such as breaking a mirror) can lead to anxiety which can in return lead to a reduction in performance and even stress and health problems (Hughes & French, 2002). Block and Kramer (2009) find that superstitious beliefs cause some consumers to buy things that are inconsistent with economic predictions, for instance, buying a product set with a lower but "lucky" (versus greater but neutral) quantity in the package. Wong and Yung (2005) show that many Chinese carefully time their babies' birth year; they believe that the year of the dragon would bring their babies good fate.

Superstition has been found to be higher among girls, lower intelligence levels, lower socioeconomic statuses, and students with a high level of suggestibility (Zapf, 1945). A survey carried out by Pew Forum (2012) on analysis of the beliefs of Muslim countries and 1501 Turkey citizens participated into a study, according to the results, 92 % of them believed in heaven and hell, 63 % of them believed in jinn and 49 % of them believed in magic, and 69 % of them hold superstitious belief such as evil eye. Kohnert (1996) and Platteau (2009; 2014) argue that the fears generated by witchcraft beliefs suppress individual wealth accumulation, mobility, and incentives for economic self-advancement more generally. They further note that, far from being a relic of the past, witchcraft beliefs interfere with current development aid projects in Africa and are frequently used as a tool for political and ideological intimidation. Akinjole (2010), in his research, stated that the white believes that superstition is founded on irrational fears and unfounded beliefs. He concluded that most of these beliefs are fetish and very untrue, but are strictly adhered to by people in rural areas, where it thrives, as it passes from one generation to the other. Makinde (2004) noted that the fact that human being prefer to live than to die brings about medicine. He noted that superstitious beliefs in the world today allow each culture to be in a position to explain the efficacy of medicine in each area. He concluded that for medicine to be developed in the world today, the difference in the use of traditional and orthodox medicine have to be harmonized.

For us, most Malians superstitions have scientific implications, so any differences in Malian beliefs and contemporary scientific beliefs should be studied and well understood.

4. The effect of superstitions on Malians socioeconomic lives

Despite their high levels of engagement to Islam and Christianity, many people in Mali recognize beliefs and rituals that are characteristic of traditional superstitions more than half of the population believes that sacrifices to ancestors or spirits can protect them from harm. In addition, roughly three quarters or more of the population in Mali say they believe in the protective power of Dabali¹, Shuya², Nashi,³koroti⁴, fetish and other sacred objects. Belief in the power of such objects is very high in Mali about 78% of the population. Superstitious rituals or activities are thought to have a positive or negative impact on the events of Malians life, consequently, influencing people's behavior in various ways effecting both one's economic ,psychological and social state.

For some Malians, superstitions lead people to carry good luck talisman, with the belief that these talismans will influence the fate in their favor. If we engage in superstitious behavior or if we really believe that we could be a victim of marabou, fetishist or sorcerer we become a slave to them; on the other hand, if we hold no real belief in superstitions, then our life and behavior is probably not influenced much by them.

In Mali, a common superstitious practice is the foreseeing of the future. Nowadays you can even have your future predicted by calling or sent to you via text message or email or through FM radios .These beliefs guide us in our work, study, traveling, getting visas to go abroad, being rich and even having a successful

¹Mystic things

²The characteristic of being bewitched.

³Magic liquid for drinking or spraying

⁴Mystic missile to harm someone

marriage.

Superstitions are strongly associated with healing and traditional medicine. For most people in Mali modern medicine is very expensive and often simply inaccessible; therefore, many seek cures or try to take preventive measures by turning to ancestral customs, such as superstitions. They also feel more comfortable dealing with a charlatan doctor who knows their customs and speaks their dialect such as Sénoufo or dogon than with a modern medical doctor who speaks French.

In Mali, on a social level, any kind of failure is seen as the action of an occult hand.

For example, school failure is not due to a malfunctioned system of education, failure in the realization of a project is not due to incompetency, unemployment is not due to bad governance etc. Today, the sudden death of an individual that appears perfectly healthy is put down to the works of an uncle, cousin or enemy; failure of a clever child at school or at an exam is considered as the responsibility of a jealous co-wife or a parent, cancer is also attributed to sorcerer who cast a spell to you through in inexplicable disease. If you are the first son, or a brilliant kid in polygamous home in Mali you are likely going to affront sorcery problems.

Superstition in Mali goes farther being a cultural thing to an integration of customs and traditions that are deeply rooted in our routine activities. Even our economies, which are based on experimental measurement such as gross domestic product, inflation rate, balances of trade etc, are not spared from superstitious activities. This is because superstition has been assimilated so deep into Malian social fabric that it has been accepted into every level of society. However, superstition becomes a problem when it challenges rationality and good sense; when Malians hide behind it to paralyze their economies.

Mali's economy is on the knee, not only caused by corruption, misappropriation of public funds and poor leadership but also attributed to evil beliefs. In Mali incensed belief in superstitions has a negative impact on how people conduct their lives, it has a demoralizing effect on Malian's life, it ends Malian self confidence, they cannot think of a reasonable way. All their thinking and working power get paralyzed under the influence of unknown fears. They consult priests, marabou, charlatan and others for making their life successful. In Mali, people often use "Nashi" and talisman thinking that could repulse evil forces; so they are confused because of the unknown.

On a global level of development of Mali, superstitions play an important hindrance role; as Mali is still trying to understand certain things that are understood clearly scientifically in the West, the development of Mali must start with a change in beliefs. This new belief should be based upon empirical evidence, rather than on thoughts drawn from societal illusion. It is necessary for Malians to analyze their mystic world to determine by themselves the divine potential that will allow them to know what is real. Though certain beliefs have brought balance to Mali society, it enslaved many.

5. Empirical Studies on Superstitious Beliefs in Mali

Various scholars have carried out different researches on superstitious beliefs. From available studies, it is obvious that the way Malians or Africans interpret superstition is quite different from that of the Europeans or Asians.

5.1 Superstitious Beliefs on daily life of Sénoufo and Dogon People in Mali

5.1.1 Research Methodology

The research is to find out the superstitious beliefs held by the people of Sikasso and Bandiagara, provide explanations of such superstitions, and examine their implications. The data collected were matched and analyzed using frequency count and percentages. The people were stratified along gender, age, status, religion, and educational background within the two communities. Four hundred and fifty five (450) members of the communities of Sikasso and Bandiagara. Christians, Muslims, fetishists, old and young, educated and illiterates, men and women were in circumstances selected as sample for the study.

Research Question: Which stated that: Which are the superstitious beliefs held by Sénoufo and Dogon Communities of Sikasso and Bandiagara in Mali?

This research question is answered in twenty different ways, which corresponds to the twenty categories of the superstitious beliefs state.

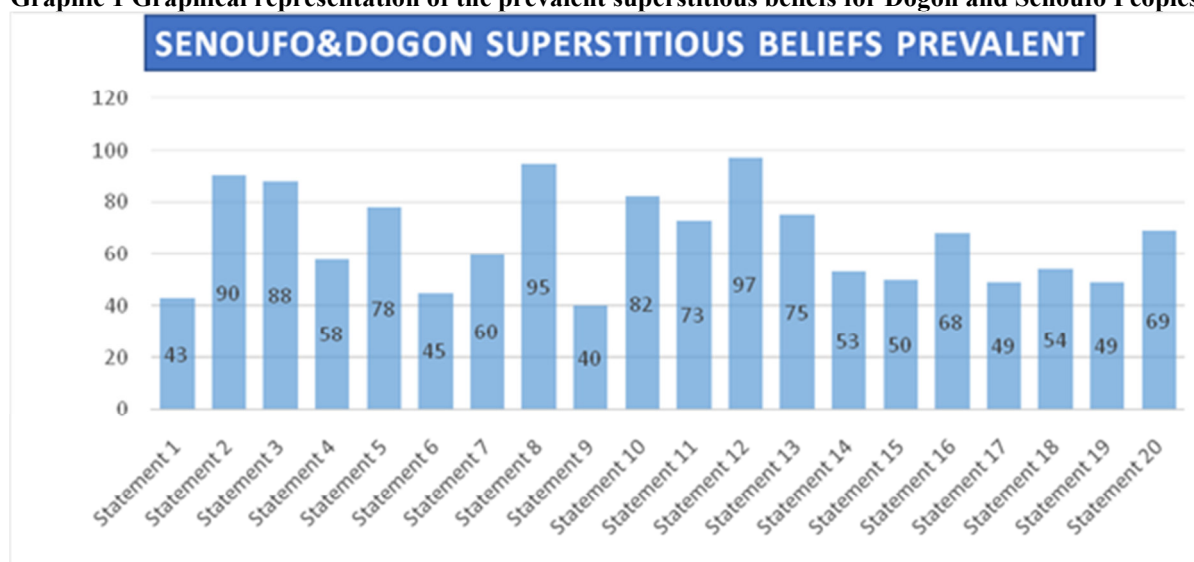
Frequency count and percentage was used to analyze the responses. The frequency and percentage of mention are shown on Table below

Table 1:
Superstitious Beliefs on daily life of Senufo and Dogon People in Mali

S/N	Superstitious Beliefs in Mali	TotalNbr	Nbr Responds
1	The hell is others ,the ill which happens to us is caused by someone	450	194
2	It is forbidden for Bozo and Dogon to marry each other	450	405
3	If male is not circumcised, he cannot see komo,he will die	450	396
4	Looking at mirror while raining can cause thunder strike.	450	261
5	Female cannot see komo,Nama,kono,she will die	450	351
6	You must not sing while taking bath, if you do, your mother will die.	450	202
7	If a person eats food while standing, he/she will not be satisfied	450	260
8	If a dog is crying repeatedly, it is seeing evil spirits or ghosts	450	428
9	It is bad luck for a person to accidentally kill a duck.	450	180
10	The flock of vultures denotes death.	450	369
11	A dead baby can come back by birth to the same family after some time.	450	328
12	The first born twin is the junior to the second born.	450	437
13	Hunting of animals or fishing during forbidden seasons and sacred days is a taboo.	450	315
14	Eating of totem animals such as tortoise, partridge etc is a taboo.	450	238
15	Do not allow children to sweep the floor because they will invite unwanted guests.	450	225
16	If you pick money from the ground, you will lose more than what you took.	450	306
17	When you whisper at night, you are calling dwarfs or snakes.	450	220.5
18	When you sweep at night, you will have a misfortune or be visited by poverty	450	253
19	Do not buy your girl friend shoes as a gift, because she would go out of your life with them.	450	270
20	If one collects gift from a dead person in the dream, the person might die.	450	310.5

Source: author's computation

Graphic 1 Graphical representation of the prevalent superstitious beliefs for Dogon and Senufo Peoples



Source: author's computation

5.2 Superstitions and traditional medicine utilization in Mali

Maliens despite their social level, their education level, are still tied to their traditions; in Mali more than 80% of population recourse to traditional medicine for primary care.

The herbalist men and women are specialist of pediatries, childbirth, mother care in traditional sector .The cost is very cheap, treatment of 200 CFA franc about 0.4 USD could reach 6000 or 10000 CFA franc about 12 USD or 20 USD in clinic. In traditional medicine, consultation fees are listed treatment and plants sell fees. The pay is just symbolic; it could be by cash or payment in kind; the ill person after recovery could give a gift by way of gratefulness

The economic accessibility, short term treatment is the determined factor for use of traditional medicine in a country victim of poverty with very low salary, underemployment, unemployment or bad harvest etc

5.2.1 Data collection and description

A total of 13 ethnics group consisting of 320 individuals with health care needs. The dependent variable is a dummy variable indicating utilization (0=no utilization; 1=utilization) of TM/H. Key independent variables were opinions on TM/H, where the ethnic representatives indicated their level of agreement on six statements cultural attitudes and beliefs related to TM/H utilization. Many of these reasons were based on the degree to which TM was culturally acceptable. Additionally information on financial background (income - proxies by equivalent monthly expenditure using an Organization for Economic Cooperation and Development (OECD) formula and split into quintiles, residence, occupation, religion of the individuals, and supply characteristics closeness to healers according to an individual's guest estimate, urbanity were collected as control variables.

5.2.2 Models

Probit models using standard maximum likelihood estimators allow for binary response for the outcome variable, the probability of use of traditional medicines ($y_i = 1$ or 0). The probit distribution was chosen over the logic distribution for ease of comparison when applying instrumental variables probit (ivprobit). The baseline probate and multivariate probits models, respectively, are as follows:

$$P(y_i | need) = \Phi(X' \beta + \varepsilon_i)$$

$$P(y_i | need) = \Phi(X' \beta + Y' \gamma + D' \delta + S' \tau + U' \omega + \varepsilon_i)$$

With X' , Y' , D' , S' and U' as independent variables and

Where X' = represents Revenue, Y' = represents Religion, D' = represents Activity, S' = represents Residence, U' = represents Ethnic, ε = represents errors terms and $\Phi(\cdot)$ = represents Standard normal cumulative distribution function.

All cultural attitudes and beliefs are first included in regressions as separate independent variables and then variance inflation factors checked for multicollinearity

5.2.3 Results

The correlation matrix (table 1), which allows, checking the correlation rate existing between the variables, indicate a positive relation between them. The coefficients show that the use of modern medicine, whether in the private sector, public or even self-medication, does not prevent the use of traditional medicine. We observe, however, that the public sector correlates closely with the private sector. The same is true of the public sector and traditional medicine. However, in the VIF test (table 2), this correlation will not affect the results that follow (mean VIF <10).

Table 1: Correlation matrix for provider types

	Private	Public	Self_modern	Self_TM	TH
Private	1				
Public	0.842331	1			
Self_modern	0.685478	0.698318	1		
Self_TM	0.779413	0.917841	0.738993	1	
TH	0.773524	0.942325	0.639692	0.87936	1

Self_modern indicates self-medication using modern drugs; Self_TM indicates self-medication using herbal products; TH indicates healer use.

Source: author's computation

Table 2: VIF test

Variable	VIF	1/VIF
Public	16.27	0.0614
Private	9.24	0.1081
Self_modern	7.38	0.1355
Self_TM	3.72	0.2688
TH	2.40	0.4174
Mean VIF	7.80	

Self_modern indicates self-medication using modern drugs; Self_TM indicates self-medication using herbal products; TH indicates healer use.

Source: author's computation

In order to understand the use of medicine, Table 3, details by the quintiles of the population income in the study which utilize the different types of medicine. The quintiles of the study range from the richest to the poorest. The data show that the use of different types of care, both traditional and modern, varies considerably from one quintile to another. The public sector is frequented by all, unlike the private sector, which, unsurprisingly, remains less frequented as one moves towards lower incomes, private sector cares become absent.

Self-medication, however, is one of the greatest practice. Traditional self-medication is the utmost care used, independently of the financial level, but it presents a slight bias towards the poorest quintiles. The use of healers is accentuated among the rich. Three-quarters of those in the lowest quintiles never use healers.

Table 3: Utilization of modern and traditional care, by quintile.

Quintile	Modern Care						Traditional Care			
	Private		Public		Self modern		Self TM		TH	
	n	% of quintile	n	% of quintile	n	% of quintile	n	% of quintile	n	% of quintile
Sénoufo& Minianka,Dogon	4	3.2	15	12	6	4.8	60	48	40	32
Sarakolé,Bambara	3	4.69	8	12.5	3	4.69	32	50	18	28.12
Sonray.Peul	2	3.7	6	11.1	4	7.4	30	55.6	12	22.2
Bozo,Bobo	2	5.56	2	5.56	2	5.56	21	58.33	9	25
Malinké,Kasonké,Tuarèg,Maure	0	0.0	4	9.76	3	7.32	26	63.41	8	19.51
Total	11		35		18		169		87	

Source: author's computation

The results are presented in a unique table (table 4) that combines both the probit and bivariate probit(biprobrates) models for modern and traditional medicine. In all four models, income and activity are the variables that determine the use of medicines. However, in the probit test, we must note the presence of a negative relationship between modern medicine and income. As a result, an increase in income leads to a reduction in the use of modern medicine. Utilization of traditional medicine evolves with income and activity. Belonging to an ethnic, religious or settlement sector does not significantly impact the use of any of the medicines. The biprobate model which estimates probate to two maximum probability equations, either a bivariate probate or a seemingly unbound probate (limited to two equations), also supports the impact of revenue and the activity on the use of different medicines. Like the probate results, the other variables remain without significant effects. In the probate models, rho is equal to zero, the value of prob> chi2 is less than 5% in all cases, thus confirming the relevance of the use of the modeling in each case for the sample studied.

Table 4: Probate and Biprobate results, coefficients

	Probit		Biprobate	
	MC	TC	MC	TC
Revenue	-1.4542*** [0.4693]	0.8329** [0.3264]	0.4136*** [-1.4758]	0.3515** [0.8137]
Religion	-0.0569 [0.3385]	-0.0431 [0.2747]	0.2928 [-0.1406]	0.2913 [-0.0420]
Activity	0.6230** [0.3072]	-0.4744*** [0.2562]	0.2670** [0.5937]	0.2658* [-0.4631]
Residence	-0.3044 [0.3509]	0.0837 [0.3262]	0.3598 [-0.3950]	0.3021 [0.0866]
Ethnic	0.2748 [0.1951]	0.1825 [0.1638]	0.2250 [0.2817]	0.1493 [0.1786]
Cons.	2.8977* [1.5983]	-0.9399 [1.2296]	1.4957** [3.3161]	1.161911 [-0.9234]
Pseudo R2	0.3885	0.1906		
Rho	0	0		
Prob>Chi 2	0.0000	0.0237		0.0038
LL	-22.3638	-27.5284		-49.5455

Robust standard errors in brackets

significant at 10%; ** significant at 5%; * significant at 1%*

Source: author's computation

It is very important to quantify the extent of each variable on use. Consequently, this study takes into account the marginal effects. Table 5 shows each result after estimation, the marginal effects for independent probit and biprobits. The probit test results suggest that one percent increase in revenue tends to decrease the probability of using modern medicine by 49.78 percentage points, but it increases the likelihood of using the traditional medicine by 27.8 percentage points. The activity influences the use of both medicines. A variation of the activity leads to an increase in the utilization of modern medicine by 21, 31 percent points and a diminishing of the utilization of traditional medicines by 15.84 percent points. In Table 5, the marginal effect of biprobate refers to the variation of the probability of an infinitesimal change in each independent continuous variable and, by default, the discrete variation of the probability for the dummy variables. It shows the marginal effects in the biprobate1 column for the two types of medicine used and when none is used, respectively. The results are characterized by the presence of the impact of income only. The results show that a one percent increase in

income increases the use of medicine. The biprobit 2, on the other hand, has the marginal effects for the purely traditional uses of medicine. Compared to the results, the use of pure traditional medicine without any application of modern medicine is strongly influenced by ethnicity. Hence ethnic beliefs influence the pure use of traditional medicines by 12.19%.

Table 5: Probit and biprobit results, marginal effects

Probit and biprobit results, marginal effects				
	MC	TC	Biprobit 1 MC=1; TC=1	Biprobit 2 MC=0; TC=1
Revenue	-0.4978*** [0.1496]	0.2780** [0.1099]	0.2729** [0.1173]	-0.1791 [0.1408]
Religion	-0.0194 [0.1159]	-0.0143 [0.0916]	-0.014 [0.0979]	-0.0484 [0.0833]
Activity	0.2132* [0.1052]	-0.1584** [0.0848]	-0.1553 [0.0899]	0.0363 [0.1038]
Residence	-0.1042 [0.1193]	0.0279 [0.1089]	0.029 [0.1013]	-0.0823 [0.1224]
Ethnic	0.0940 [0.0663]	0.0609 [0.0546]	0.0599 [0.0508]	0.1219*** [0.0678]

Robust standard errors in brackets

significant at 10%; ** significant at 5%; * significant at 1%*

Source: author's computation

6. Relationship Between Science and superstitions Belief in Mali

6.1 Science and Superstitions

According to French dictionary le Larousse, Science can be defined as the state of knowing; knowledge as distinguished from ignorance or misunderstanding.

In the beginning of human history, humans were like wild animals. Ancient human lived in the fear of darkness. They were susceptible to diseases, insects, storms floods, earthquakes, cold, heat or any natural disaster. All these things were nature's threats to living beings. Early human beings could not understand why and how such miseries did occur. We have to examine how science and superstitions affect our daily life and our thinking.

Many of us who know his, her birthday have a habit of depending on the horoscope as a way to know the future. According to scientists in the position of a planet or a star at the time of your birth does not determine your destiny or future. What shapes your future is your attitude towards life and hard work. There are many stories about the unknown phenomena. Rather than believing in such stories and irrational explanations one should try to understand these unknown phenomena on a scientific basis. Superstition is irrational way of explaining usual or unusual events. Science does not believe in irrational way of explaining events. Though Science aims to know the cause and effect of each phenomenon based on scientific principles that can be verified with experiments and is proven on the basis of well-established scientific rules, for us there is the relation between science and superstitions.

Conflict between science, superstition, and religion is not unique only to Malian culture but in the western society too. The church opposed the idea of Nicholas Copernicus who said that the earth is not the center of the universe, a belief which was accepted by the Bible. Several other scientists had to suffer the wrath of the church for their scientific beliefs which contradicted with the Bible. But their ideas ultimately got accepted and helped to end the superstitious belief of the religion¹.

Although we live in the scientific age; most people are still somewhat superstitious; otherwise, there would be no such interest in daily future and maraboutism. When we distinguish between science and superstition, we must be careful because the science of the era may be the superstition of another. For example, black magic was once regarded as a science but is today seen by life science as superstition, and necromancy was once viewed as means of obtaining knowledge but is now regarded by astrochemistry as superstition.

¹Pushpa Raj Adhikary (15 April 2015), Science and Superstitions, Interdisciplinary Thoughts of ku Academics

Table 6 Scientific Explanation of some Superstitions in Mali

Nbr	Sciences	Superstations	Mystic explanation
1	www.website.com	Toubissimalaw3 times	Any bad or good thing you have to do mystically, always begin by tou bissimilaw 3 times, as www. To open any website
2	Air plane	Wizard aircraft	Distaff of textile worker use as plane by Flying wizards seeking soul
3	Means of contraception	Tafo or Mystic rope	Rope fastened by woman during relations to avoid pregnancy
4	autopsy	Magic calabash	red cock and new calabash used in cemetery to find out who kill a person or how he /she is died
5	Invisible on the net or offline	Dibilan or invisibility	Mystically use black cat to be invisible to any human being
6	Anti-bullet	Nèkèhaya Bakan or anti-bullet Mystic rope	Fasten Bakan, a mystic rope on your wrist against bullet or iron
7	Horoscope	Futurism through Trabou or sand and through cowries	Use cowry or sand to foresee the future of the day ,the month ,the year or even for the whole life
8	Modern medicine	Traditional medicine	Traditional medicines use local plant, herb or nature products to heal diseases modern medicine some time cannot heal
9	Scientist police	Magic pestle	Magic pestle is used to find out bad persons such as thieves, wizards, criminals etc
10	Sleeping pill	Loincloth weft	Loincloth weft use by some women getting to sleep their husband when they are going out for black magic or others
11	Missile or Drone	Koroti mystic missile	Koroti or mystic missile send by a witchcraft to kill or harm someone
12	Psychologist	Charlatan	The charlatan is a seller of medicines who practicing quackery or some similar confidence trick in order to obtain money, fame or other advantages via some form of pretense or deception.
13	GPS	Mirror on hunters hat and clothes	Mirror on hunters hat and clothes allow them mystically to know the position of prey or home when they are lost in the bush
14	Gynecology	Komo's interpretation	Komo is able to know whether a unborn child is male or female before his/her birth
15	Anti virus	Koroti lakari or anti - bewitchment	Talisman use to prevent or cure bewitchment

7. Conclusion and propositions

Despite the 21st century development, civilization and globalization, one aspect of the lives of many Malians continues to live in the archaic world. Blinded by fears, lack of education and inability to fully embrace science or question things, superstition remains a robust and unchallenged force controlling the lives, minds and beliefs of many Malians. Whether your God is Kilè, Ama, wealth or simply the mountains, rivers or komo, you engages in superstitious behavior to certain deadline; but if you allow fear to rule your life, you are a victim and will ignore many things of the really life. This paper estimated the value of a particular type of superstitions: belief of object, talisman etc which can bring good or bad luck. We have shown that the value of superstitions can be economically significant.

Superstitions should not be confused with tradition and culture. Ignorant people have faith in something unseen; in Mali even educated people are doing the same. The belief in sorcerer in Mali is a very sad issue. There are people who may or may not believe in superstitions but they benefit from a superstitious society. Even if Mali government certainly do not want to adopt a radical point of view about superstitions, we think that it is the right time for taking measure about certain worthless beliefs that nowadays can be called superstitions and that have leaded a mental contamination on many Malians and also have implications on the economic and social development of the country. That can be possible by banning on FM radios any superstitious propaganda made by some marabouts, some charlatans and illusions sellers. Movies and media should take up the challenge of

fighting against this nuisance; conducting programs on how miracles, djinns are not trustworthy will go a long way in driving away the beliefs. The only cure for unnecessary superstitions is education and knowledge. Malians should develop their reasoning power; they must have a scientific mind and should try to analyze things in logical way, we think that in every superstition, there is scientific principle. It is important for religious organizations, religions leaders and civil society to the accent on the role of personal responsibility in the determination of one's chance rather than the blind dependence on some spiritual processes to undoubtedly change one's wealth from poverty to richness temporary.

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