

An Examination on the Contributions of Islam to Sciences and Civilization

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Abstract

Several attempts have been made by scholars, both medieval and contemporary on the impact of Islam on scientific discovery. Less attention, however, is always accorded to the historical antecedents of the earlier Muslim scholars, who made frantic efforts towards the discoveries. Islam as a divine religion places high premium on the acquisition of knowledge especially that of sciences. It considers knowledge as a comprehensive whole, which covers both spiritual and material aspects of human life. The religion, Islam torches every aspect of human life for the growth, development and advancement of society. Acquisition of knowledge of humanity, social sciences as well as the pure and applied sciences is comprehensively expressed in Islamic education. Not only this, the history portrays the leading indelible roles played by the early muslims on these various fields of knowledge. That is why Islam has declared acquisition of knowledge compulsory for all Muslims. This paper therefore analyses the contributions of Islam to civilization with particular references to sciences. It as well affirms that Islam is beyond only the religion of prayers and rituals. The work is historic, analytic and explorative in nature. Recommendations are also also put forward as suggestions for the present generation cum posterity in general and muslims in particular.

Keywords: Interplay, Religion, Science, Case, Islam.

PREAMBLE

This article is about the relationship between religion and science with particular reference to Islam. On the first premise, Islam analyses the relationship between Muslim communities and science in general. In Islam, science, the study of nature, is linked to the concept of *Tawhid* (the Oneness of God). This is so because; Muslims are called to reflection of the creations of Allah.

The creed of Muslims centred on the Qur'an as the final revelation of God for the guidance of humankind. The Qur'an explains how Allah has honoured man over and above other creatures, such that he is empowered to go into the sky and deep into the sea (Q.17:70). The importance of knowledge cannot be over emphasized and that is why perhaps the very first revelations of the Qur'an (Q.96:1-5) deal with reading, creation (biology) and the act of writing (Adeleke, 2005).

Seeking knowledge is obligatory in Islam for every Muslim, man and woman. The main sources of Islam, the Quran and the Sunnah (Prophet Muhammad's traditions), encourage Muslims to seek knowledge and be scholars, since this is the best way for people to know Allah (God), to appreciate His wondrous creations and be thankful for them.

Islam, however, obliges Muslims to acquire knowledge of all fields and to actualize the human civilization created by Islam. The early Muslims based quench for knowledge on unity devoid of racial, ethnic and even religious discrimination. In fact, they learnt from earlier civilizations and also incorporated their science and culture (Sabra, 2013 and Adeleke, 2005). By and large, the study of various aspects of sciences and arts flourished and brought development and honour to humanity. Subjects like Mathematics Physics and Technology, Medicine, Astronomy, Chemistry, Geography and Agriculture. Others are: Philosophy, Literature, Theology and Grammar (Abdullah, 1986).

In Islam, nature is not seen as a separate entity, but rather as an integral part of Islam's holistic outlook on God, humanity, and the world. This link implies a sacred aspect to the pursuit of scientific knowledge by Muslims, as nature itself is viewed in the Qur'an as a compilation of signs pointing to the Divine (Sabra, 2013).http://en.wikipedia.org/wiki/Islam_and_science_-_cite_note-2 It was with this understanding that the pursuit of science was expressed in Islamic civilizations, specifically during the eighth to sixteenth centuries, prior to the colonization of the Muslim world (Sabra, 2013).http://en.wikipedia.org/wiki/Islam_and_science_-_cite_note-3 Theoretical physicist Jim Al-Khalili expressed that the modern scientific method was pioneered by Ibn Al-Haytham (known to the west as "Alhazen") whose contributions he likened to those of Isaac Newton. The empirical attitude of the Qur'an and Sunnah inspired medieval Muslim scientists to develop the scientific method (Abdullah, 1986 and Gingerich, 1986). It is also known that certain advances were made by medieval Muslim astronomers, geographers and mathematicians. For instance, Al-Khwarizmi's (c. 780-850) development of algebra in order to solve the Islamic inheritance laws,^[26] and developments in astronomy, geography, spherical geometry and spherical trigonometry in order to determine the direction of the Qibla, the times of Salah prayers, and the dates of the Islamic calendar (Fielding, 2013).http://en.wikipedia.org/wiki/Islam_and_science_-_

cite_note-4

The increase use of dissection in Islamic medicine during the 12th and 13th centuries was influenced by the writings of the Islamic theologian, Al-Ghazali, who encouraged the study of anatomy and use of dissections as a method of gaining knowledge of God's creation (Savage-Smith,1995). In al-Bukhari's and Muslim's collections of sahih hadith it is said: "There is no disease that Allah has created, except that He also has created its treatment." (Muhammad, 1989). This is culminated in the work of Ibn al-Nafis (1213–1288), who discovered the pulmonary circulation in 1242 and used his discovery as evidence for the orthodox Islamic doctrine of bodily resurrection (Fancy, 2006).

OPERATIONAL DEFINITIONS

Before delving into the interplay between religion and science. It is deemed pertinent to have a cursory look at the key terms used in this study. The word interplay in this work connotes interaction. As usually used in academic milieu, its usage here denotes relationship between the two divine religions (with particular reference to Islam) and civilization. Religion is a polysemous word. It is of many definitions by the scholars of religions. According to Bolaji (1993), it is defined as the means by which God as spirit and man's essential self communicate. It is a phenomenon resulting from the relationship which existed from the beginning of life between God and man whom he created for Himself. The word 'Science' which is known as '*Ulum*' in Arabic is from the Latin word 'Scientia' which connotes 'knowledge' or "to know" (Akintola, 1990). It is defined by Encyclopaedia Britannica (1988) as "any intellectual activity concerned with the physical world and "entailing unbiased observations and systematic experimentation". Akintola (1992) defines it as "an organised body of knowledge and opinion which is systematically supported by formal proofs or by observational evidence ...". It could be inferred from the above, therefore, that science is a body of knowledge obtained or acquired through systematic observation and experiment which allows us to deduce laws and principles.

The word case study denotes a detailed account of development of a person, a group of people or a situation over a period of time (Sally, 2012). It is used here to connote a vivid account of Islam's contributions to sciences and civilization. Islam is an Arabic word derived from a four-letter verb '*ASLAMA*' (Cowan, 2009). It means to make something peaceful. Hence, it linguistically connotes the religion of peace. It is a religion that expresses a way of life based on the commandments of Allah (Adeleke, 2009).

Islam contributes significantly to every human aspect personally and scientifically. The first thing to be conservative with is what the word Islam itself connotes. The religion of Islam is not named after a person as in the case in Buddhism which was named after Gotam Buddha, Confucianism after Confucius and Marxism after Karl Max. It was not named after a tribe like Judaism after the clan of Judah and Hinduism after the Hindus. Hence, Islam is the true religion of God (Almighty Allah) and as such, its name connotes the central principle of God (Bilal,2005).

EVOLUTION OF SCIENCE IN ISLAM

Islam according to Abdullah (1986) was the first to create a civilisation that was multiracial, multicultural and intercontinental. He sums up this supposition thus: 'Islam was the first to make significant progress towards what it perceived as its universal mission while western civilization is accorded the first to embrace the whole planet.' This is also corroborated by Okunu (1999) as he expresses: 'The influence of the Muslim civilization over Western culture was so great and diverse that it is visible even today in many of the names of things and articles of ordinary use. Science owes a great deal more to Arab culture; it owes its existence... What we call science arose in Europe as a result of a new spirit of inquiry, of new methods of investigation, of the method of experiment, observation, and measurement, of the development of mathematics in a form unknown to the Greeks. That spirit and those methods were introduced into European world by the Arabs. (Oluwatoki, 2006 and Okunu; 1999).

Human history, according to Sartons could be divided into periods of fifty years. Each period was identified with the most influential scientist of the time and named the period as that scientist's epoch. For instance, 400-350BC is regarded as the age of Plato (C.347BC), followed by the epochs of Aristotle (C. 322 BC), Euclid and Archimedes. From the fifth century BC, Jabir b. Hayyan (d. 200AH/815AD Geber in Medieval Europe) was said to be the first Muslim Scientist to appear between 750-800 periods, followed by al-Khwarizmi (d.850, Khiva among the West), ar-Razi (d.925, Rhazes), Mas'ud (d.957) Abu al-Wafa' (d.997) al-Biruni (d.1050) and 'Umar al-Khayyam (d.1124) (Elegba,1993).

The above Muslim Philosophers cum scientists appear to be in full control of the world stage of science for about three hundred and fifty years (750-1100 CE). Muslims reappeared for another two hundred and fifty years i.e. two centuries beginning with the epoch of Ibn Rusd, Nasir ud-Din al-Tusi and Ibn Nafia. This historical chronology informs Sartons' further assertion about Muslim civilization when he says: "The main task of mankind was accomplished by Muslims..." (Elegba,1993).

At the beginning of the nineteenth century, modern science arrived in the Muslim world. The Qur'an

encourages the acquisition of science and scientific knowledge. Not only this, it also urges humans to reflect on the natural phenomena as signs of God's creation." Some scientific instruments produced in classical times in the Islamic world were inscribed with Qur'anic citations. Many Muslims agree that carrying out scientific research is an act of religious merit, even a collective duty of the Muslim community (Qura'n 96: 1-5 and Robert, 1928).

Prophet Muhammad (SAW), though unlettered, having been divinely taught, encouraged his disciples to acquire knowledge. Thus, as a result of Islam, Arab Muslims became the touch bearers of science and learning. Islam was itself responsible not only for the creation of a world civilization, in which people of many different ethnic backgrounds participated, but it also played a central role in developing intellectual and cultural life (Muhammad, 1990).

The Holy Qur'an had laid good foundation for all aspects of knowledge and administration. For example, human reproduction is taught in some areas of the Qur'an viz:

And indeed we created man (Adam) out of an extract of clay (water and earth). Thereafter we made him (the offspring of Adam) as a sperm in a safe lodging (womb of the woman) then we made the sperm into a clot, then we made the clot into a little lump of flesh, then we made out of that little lump of flesh bones, then we clothed the bones with flesh and then we brought it forth as another creation. So blessed is Allah, the best of Creators (Q.22:12-14).

It is on this, and others that the Arabs based their observation and practicabilities. Upon the death of the prophet, he was succeeded by four caliphs namely: Abubakr (632-634), Umar (634-644), Uthman (644-656) and Ali (656-666). During his ten years of administration, Umar gave the community a high level of administration, an experience gathered from the prophet. The two famous Muslim dynasties, Umayyad and Abbasid- followed when Spain was taken over by the Muslims, it heralded the golden age of Islam. Then Cordova was established as the capital and soon became Europe's greatest city, not only in population but in cultural and intellectual life (Adeleke, 2005).

SCIENCE IN THE MUSLIM WORLD

Science in the muslim world refers to the science developed under Islamic civilization between the 8th and 16th centuries, http://en.wikipedia.org/wiki/Islam_and_science - cite_note-Hassan-Dcline-11 during what is known as the Islamic Golden Age. http://en.wikipedia.org/wiki/Islam_and_science - cite_note-12 It is also known as Arabic science since the majority of the texts during this period were written in Arabic, the *lingua franca* of Islamic civilization. A number of modern scholars such as Fielding H. Garrison, http://en.wikipedia.org/wiki/Islam_and_science - cite_note-13 Abdus Salam and Hossein Nasr established that the scientific method have been greatly inspired by Muslim scientists who introduced a modern empirical, experimental and quantitative approach to scientific inquiry (Fielding, 2013).

There is a number of verses abound in the Qur'an which make allusion to learning or knowledge. Indeed, the first Qur'anic verses revealed to Prophet Muhammad (saw) which urges him to "read" show a good rapport between science and Islam. Other Qur'anic verses include: "...Are those who know equal to those who know not?". (Q39:10). "...And none knows its right interpretation except Allah and those who are firmly grounded in knowledge (Q3:7)"

As part of its contributions to knowledge, "House of Wisdom" Bayt al-Hikmah was founded in Islam by Abbasid Caliph Ma'mun in Baghdad to be a centre of science. Caliph Ma'mun was one of the successors of the prophet after the demise of the four orthodox caliphs. He was a great scholar and a lover of scholarship. He gave liberal patronage to men of learning and encouraged scholarly discussions in his court. Thus, his court became the resort of philosophers, astronomers, physicians, scientists, poets, and other men of letters. There were adequate provisions for scholars and students to remain in this academy for study and students came from various parts of the world to this academy.

A SURVEY OF ISLAM'S CONTRIBUTIONS TO SCIENCES

Creation and evolution

The Quran contains many verses that describe creation of the universe. Some of these verses could be succinctly expressed here. The Qur'an expatiates that God created the heavens and earth in six separate layers (Q. 7:54), the earth was created in two eras (Q.41:9). The heavens form layers, one above the other (Q.67:3). The angels inhabit the seventh heavens. The lowest heaven is adorned with lights (Q.41:12), the sun and the moon (which follow a regular path), (Q.71:16, Q.14:33) the stars (Q.37:6) and the constellations of the Zodiac (Q.15:16) among others.

Sciences are explicitly explained in the Qura'n as branches of knowledge for the need of man. These include those that are relating to modern biology, botany, zoology, chemistry, physics, electricity, heat light,

scales, and measurements, sound, and weight. Other knowledge raised in the Holy Qur'an include agricultural sciences to consist farming, horticulture, and irrigation. Among other considerations in the realm of science in the Holy Book is health science which include physiology, psychiatry, psycho-analysis, dietary regulations and medicine (oral and non-oral). The Qur'an also calls for general reflections on other branches of natural science concerning the sky, water cycle and seas, the earth's atmosphere and its relief, geology and mineralogy and of course geography and anthropology (Akintola, 1992).

The Qur'an explained how Allah created everything in the universe and brought all lives out of water. He created humans from earth (not monkeys) and there is no need to attempt fabrications of "links" to the animal world in Islam. This is expressed by a number of references from the Qur'an viz,

And Allah has Created every animal from water; of them are some creeping on their bellies; some walk on two legs; and some on four. Allah Creates what He wills: for sure Allah has Power over all things (Quran 24:45).

Early Muslims and Their Contributions to Science

Early Muslims played indelible roles to advancement of society, civilization as well as sciences. For instance, Al-Harith b. Kaladah of Ta'if (d.634CE/ 14AH) otherwise known as 'Doctor of the Arabs' was the pioneer of Arab knowledge of science. In his findings, Robert Briffault(1928) earlier illustrated that it was the Arabs and early Muslim scientists who injected the spirit of inquiry into Europeans. In his words, "...New method of investigation, experiment, observation, measurement, the development of mathematics in a form unknown to the Greeks" (Abu Hamid, 1999).

Muslim scholars invented the numerical systems and algebra. Muhammad b. Musa, in the realm of Physics invented pendulum while the Muslim mathematicians such as al-Khwarizmi, Muhammad b. Zakariya' (among others) did not only pioneer the theory of algorism but also were the first to use decimal notion. Some chemicals, according to Akintola (1990) were discovered by Muslim scholars. These chemicals include: sulphuric acid, nitric acid, potassium, ammonia salt, alcohol, preparation of mercury. Also, Ibn Zuhr (Avenzoar 1091-1192) of Andalusia (Cordova) introduced surgery as well as pharmacology in the 12th century.

Abu Ali Husayn ibn Zina otherwise known as Avicenna among the Latin scholar was regarded as the Great Physician. Indeed, his *Magnum Opus* (Canon) served as a veritable material for several centuries world over, especially in the European Universities. Abu Bakr Muhammad Ar-Razi made his indelible print in the field of medicine. The Muslims also developed original concepts in physics and chemistry. For instance, al-Hazim had a pioneering work on optics. About twenty-one scientific discoveries invented by the early Muslim scientists (Akintola, 1990 and AbuHamid, 1999).

Sherif (200) asserts that one is struck by the magnitude as well as importance of the contributions made by Muslims to the various branches of science, especially to mathematics and astronomy. From the 9th to the 13th centuries, Muslims were acknowledged as the world leaders in the development of the Arts and Sciences. Sighting from the Enclopaedia Britannica, Muslim scholars calculated the angle of the ecliptic, measured the size of the Earth, calculated the position of the Equinoxes, invented the pendulum clock, explained in the field of optics and physics, such phenomena as refraction of light, gravity, capillary attraction and twilight (Enclopaedia Britannica, 1986).

In the area of chemistry, Muslim scholarship led to the discovery of such substances as potash, alcohol, nitrate of silver, nitric acid, sulphuric acid and mercury chloride. It also developed to a high degree of perfection the arts of textiles, ceramics and metallurgy. In mathematics, the Arabs adopted the concept of zero from the Indians, which enabled them to develop new areas of mathematics. Some mathematics processes retain their Arabic names today, such as *al-Jabr* which is now referred to as (Algebra). Similarly, in chemistry, words like "alcohol" and "*al kali*" are derived from their Arabic names *al-kahl* and *al-qaliy* respectively. Some of these contributions of Muslims to sciences are succinctly expressed below.

Astronomy: This is a science of formation of heavens and in particular, the structure of the heavens, the number and configuration of the stars and the distances of the stars. At the advent of Islam, the Muslims' interest in astronomy arose in the necessity to determine the time of prayers (*Salawat*) and the direction of the *ka'abah* to turn to when praying. The same need arose for the orientation of the mosque. This gave a religious impetus to the study of astronomy, Geography and even Mathematics (Abbas, 2011).

To develop the knowledge of astronomy, the second Abbasid Caliph, al-Mansur, began its study in Baghdad during the 8th century. Al-Ma'mun, the seventh Abbasid caliph improved tremendously on it and even encouraged research on astronomy and mathematics. In the 11th and 12th centuries, astronomy flourished in Muslim Spain resulting in a good deal of creative and original work of this branch of science (Abbas, 2011 and Gibb, 1974). The astronomical observation recorded in Ma'mun's time in connection with the equinoxes, the eclipses, the apparitions of the comets and other celestial phenomena were unprecedented. Innumerable works on arithmetic, geometry, philosophy, astronomy, meteorology, optics, mechanics, medicine, etc were compiled and

made available to the public. Indeed, the first observation in Islam was established by Ma'mun at Shamassia on the plains of Tadmor while several others were created afterwards at Wasit, Apamea. Sharif's *History of Muslim Philosophy* is replete with a number of observatories erected by Muslims all over their vast empire (Sharif, 200). One of the greatest astronomers of Islam was Abdullah Muhammad Ibn Sinan al-Battani. Through this research, he was able to determine many astronomical co-efficient, with precision. His book was translated into Latin and Spanish in the 12th and 13th centuries. The book enjoyed wide acceptability among the European scholars of the middle ages.

Chemistry: chemistry as a science deals with the composition and properties of substances and changes of composition they undergo. It has been divided into organic and inorganic. This division in modern chemistry was done by a Muslim scientist called al-Rāzī (Arnold and Guillane, 1994). In his contribution to research on chemistry, Jabir Ibn Hayyan (Geber in Latin). His most important discovery was the preparation of sulphuric acid which is one of the most important elements in chemistry. Other element prepared by him is Nitric acid. Many of his works in Arabic language were translated into Latin. Jabir formed some technical terms which have passed through Latin into European languages. Some of them are alkali from '*alqali*', antimony from *ithmad*, alembic from 'anbia (League of Arabs, 1974 in Abbas, 2011).

Dhu'l-Nun and al-Jahiz were two other important Muslim chemists of the same era. The former mostly dealt with the art of transmutation of metals while the latter prepared ammonia from animal offals by dry distillation. Other notable Muslim chemists were: Ibn khaldun (d.1406), Al-farabi, Ibn sina (Avicenna) and Abul-Qasun Muhammad al-'Iraqi among others. The Muslim chemists applied their chemical knowledge to a large number of industrial art and their effort have, to a large extent, helped the development of modern chemistry (Fielding, 2013).

Medicine: It is a general knowledge that medicine is as old as man. For a number of years, Arabs had been practising their own system of medicine in form of herbs and shrubs (Tibbu-Nabawi, 2013 and George, 1927) even prior to the arrival Islam based on their experience. The arrival of Islam, no doubt, heralded more knowledge and confidence in the preparation and administration of medicine. In early Islam, not much attention was put to medicine except those approved and practised by the prophet (Tibbu – Nabawi, 2013).

The study of medicine properly began during the Umayyad period and the first Arab physician was Luqman while the second was Khuzaym. Both and others that followed were inspired by Greek medicine on which they translated a lot of materials. In addition, Khalid Ibn Yazid Ibn Mu'awiyah got both Egyptian and Greek books translated. They served as impetus to the study of medicine by the Arab Muslims. Aside from translation of books of various books having knowledge of the medical systems of some nations, they made many valuable new discoveries in the theory and practice of medicine.

A renowned western scholar, Robert (1928) attested to the fact that Arab's medicine serves as basis for Europe and modern medicine. Other areas of specialization of Arabs Muslims in medicine were: anatomy, physiology, bacteriology. Their investigations on the causes, symptoms and effects of some diseases are highly remarkable, for example, Al-Razi was the first physician to differentiate between smallpox and measles. Al-Tabari was the first physician to discover tuberculosis as an infiltration (Arnold, 1994). In the area of surgery, Muslim scientists had made much advancement. They introduced many surgical instruments and many methods were suggested by them for the treatment.

In aid of medical research, and to actualize their theoretical and practical accomplishment, hospitals were built beginning from the Umayyad period (656-749). During the Abbasid era, improvements were made on hospitals and efforts were also made to attach gardens to some of them where medical plants were cultivated. Moreover, Abbas of Iran, Ali Ibn Rezvan of Egypt, Ibn Butlan of Baghdad, Abu Mansur Muwaffaq, Ibn Wafeed of Spain, Masooya of Baghdad, Ali Ibn Issa of Baghdad, Ammar of Mosul and Ibn Rushd (Averroes) of Andalusia, whose works were translated to Latin were used in European universities hitherto (Akintola, 1992 and Abdullah, 1986).

Pharmacology: Muslim doctors launched many of the modern beneficial specifics centuries ago. They made science of pharmacology and compound cures, and set up the first pharmacies on the modern model. Baghdad alone had 60 Chemists shops dispensing prescriptions regularly at the changes of the caliph. This can be traced to the names given in Europe to quite a number of medicines and herbs which are from their Arabic, Indian or Persian origin "such are "alcohol which was derived from *alkali*, alkaner, apricot, arisenic," to mention but a few (ISL 434, 2012).

Geography: By the nature of the Arabs, in the olden days, they travelled a lot on trade missions and for effective administration of their vast area. There was need therefore to know the terrain of their land and its topography. The need for the determination of direction principally spared them to study the geography of the area.

In particular, the hajj period made the knowledge of geography compelling in order to help disseminate information to the pilgrims who journeyed to Arabia from all over the world. This propelled their interest in studying geography and indeed other areas like religion, history, economics and even politics. As a result, a number of books on geography were produced by Muslim geographers and travelers. Translation of these books

was made for European use²⁰.

During the Abbasid period of caliph al-ma'mun, his interest in geography made him to appoint seventy scholars to draw a large map of the world (League of Arabs, 1974). Many books of map were written by Muslim Geographers. The greatest geographer of the middle age was Abu Abdullah Ibn Abdullah. He wrote a book on world geography which he completed in 1154. It was entitled *Nuzhat al-Mustaq fi ikhtiraq al-faq*. It ranked first among the medieval works on history and geography. It gave a vivid description of Europe and other works derived their source mostly from it (Sa'ud in Abbas, 2011).

Mathematics: Mathematics (hisab) means much to the Arabs and their lives. It was used to calculate both the mundane and spiritual life of man. This situation influenced the Muslim Arabs' interest in the subject. The Arabs started work on arithmetic in the second half of eighth century. Their first task in this field was to systematize the use of the Hindus minerals which are now permanently associated with their names. The rapid development in mathematics in the subsequent ages could not have taken place without the use of numerals, particularly zero without which all but the simplest calculations become too cumbersome. The zero was mentioned for the first time in the arithmetical work of al-khawarizini written early in the third century. The west also derived the use of numerals from Arabic, and that is why it is known and called Arabic numerals (Fakhr, 1992).

Though, Greek and Indian works served as impetus for the Arabs, the creative and dynamism of the Arabs raised the study tremendously such that up till the 11th century almost all works on mathematics were done by the Muslims in Arabic language.

The popular logarithm in mathematics has its origin from *al-khawarizmī* (a native of khawarizm), a distinguished mathematician, astronomer and geographer of the 9th century. Up till the end of 18th century, the science of numbers (1, 2,3,4,5, e.t.c) was called as algorism after the Muslim founder. Kitabal-Jabr wal-Muqabalah was written by al-khawarizmi (the book of restitution and comparism) which is the main object of algebra i.e. comparism of two sides of equation (Arnold, 1994). More so, Al – Biruni (363 – 432/973-1040), Ibn Sina (370-428/980-1037), Ibn al-Samh d 427/1035), Muhammad Ibn Hussain al-Karkhi (d.410/1019 or 420/1029), abu sa'id al-Sijzi (c.340-c.415/c951-1024) are some of the arithmeticians who worked on the higher theory of numbers and developed the various types of numbers (Is-haq, 2012).

CONCLUSION

Knowledge plays significance roles in life of a man. This is well portrayed in the life of the early Muslims as succinctly explained in this work. It is on this note that the conclusion is drawn that Islam plays high premium on the acquisition of knowledge especillay that of the sciences.

RECOMMENDATIONS

From the analysis of the impact of Islam to the civilization the following recommendations are put forward for the present generation and the prosperity:

Muslims as well as other members of the society should seek for ample knowledge as a treasure for the survival of the society.

Muslims of the present generation should as well acquire much more knowledge on sciences. This will allows them to also contribute progressively to the growth, development and advancement of the society.

Both Muslims and Christians are to work hand in hands for the survival of the society. This was displayed by the early Muslims as portrayed in this work.

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