RESEARCH ARTICLE

On Continuity of γ *GRWC Sets

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ABSTRACT

Here continuity of γ *grwc (γ *Generalized Regular Weakly Closed) sets are discussed. For this purpose the γ *grwc sets are introduced and used. Further investigated and analyzed its relationship with various sets in a topological space (TS).

Key words: γ *grwc set.

INTRODUCTION

Topology plays a vital role in Mathematics and it is considered as one of the useful branch. Norman Levine explained the Generalized closed sets [9] in 1970 and derived many properties in a TS. Here continuity of γ * grwc sets were analyzed. This paper is framed as follows, in section 2 - literature Review and preliminary concepts were presented. section 3 - deals with continuity of γ *grw closed set and finally the conclusion is given in section 4.

LITERATURE REVIEW AND PRELIMINARIES

In this section, some of the literatures were reviewed related to study area and preliminaries were mentioned. Generalized closed sets was introduced by Levine [9] (1970) and studied some of its properties. Balachandran et al [2] (1996) has discussed g – continuous maps, that contains continuous as well as gc – Irresolute maps.Mashour et al [12] (1981) investigated α- continuous and α- open mapping in a TS. Sundaram et al [16] (1991) has introduced a class of semi generalized continuous maps. In this paper, we introduce γ *grwc sets and studied its continuity in a TS.

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Basic concepts of Topology

Definition 2.1 Closure ($C\iota$) and Interior (I) of a set.[8]

Let X be a TS and A $\subseteq$ X, I(A) is defined as the union of all open sets contained in A and $C\iota$(A) is defined as the intersection of all closed sets containing A.

Definition 2.2

Let (X,τ) be TS and a subset A of X is said to be

(i) α open [10] if $C\iota$(A) $\subseteq$ I($C\iota$(I(A))) and α closed set[13] if $C\iota$(I($C\iota$(A))) $\subseteq$ A.

(ii) regular open [14] if A = I($C\iota$(A)) and regular closed [4] if A=$C\iota$(I(A)).

(iii)δ closed [8] if δ-$C\iota$(A) = A, Where δ-$C\iota$(A) ={x$\in$ X: I($C\iota$(H)) $\cap$ A $\neq$ $\emptyset$, H $\in$ τ and x$\in$ H}

(iv)Weakly closed (w-closed) [12],if $C\iota$(A) $\subseteq$ H whenever A $\subseteq$ H and H is semi open in (X,τ).

(v) γ open [2],if A $\subseteq$I($C\iota$(A)) $\cup$ $C\iota$(I(A)) and γ closed [4] if$C\iota$(I(A)) $\cap$I($C\iota$(A)) $\subseteq$A.

(vi)Semi open set [7] if A$\subseteq$$C\iota$(I(A)) and semi closed set [8] if I($C\iota$(A))$\subseteq$ A.

Definition 2.3

Let (X,τ) be TS &A$\subseteq$X is called

(i) Generalized closed set (g closed) [6] if $C\iota$(A) $\subseteq$ U whenever A$\subseteq$U and U is open in (X,τ).

(ii) δg closed [3], if $\delta C\iota$(A) $\subseteq$ H whenever A $\subseteq$ H is open in (X,τ).

(iii)θgclosed set [4] if $C\iota_{\Theta}$(A) $\subseteq$U whenever A $\subseteq$U and Uis open.

(iv)Generalized α closed (g α closed)[8] if α cl(A)$\subseteq$ H and H is α open in (X,τ)

(v) αg closed [8], if α $C\iota$ (A)$\subseteq$ H and H is open in (X,τ)

(vi)Regular generalized weakly set (rgw closed) [15], if $C\iota$(I(A)) $\subseteq$ U whenever A$\subseteq$U and U is regular semi open in X.

(vii)   sg closed [1], if s$C\iota$(A) $\subseteq$ U whenever A$\subseteq$U and U is semi open in X.

G γ *grw closed set

In this section, we introduce, investigate a new class of continuous functions using the new set called γ *grwc (γ * Generalized Regular Weakly closed) Sets.

Definition 3.1

A function f : (X, τ) $\longrightarrow$ (Y, σ) is called γ *grw continuous if the inverse image of every closed set in (Y, σ) is γ *grwc set in (X, τ).

Theorem 3.1

Every continuous function is γ *grwc continuous.

Proof:

Let f : (X, τ) $\longrightarrow$(Y, σ) be a continuous map. Let V be a closed set in (Y, σ)

Then f $^{-1}$ (V) is closed in (X, τ). Since every closed set is γ *grwc. Therefore f $^{-1}$ (V) is closed in (X, τ). (i.e) f is γ *grwc continuous.

Remark 3.1

The converse of Theorem 3.1 need not be true.

Example 3.1

Let X = {e,m,s,h} , τ = { $\emptyset$,X, {e},{m},{e,m},{e,m,s}}and

$\tau^{\rfloor}$ = {$\emptyset$,X,{h},{s,h},{e,s,h},{m,s,h}}

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γ˙grw closed sets of (X,τ) are {∅,X,{e},{m},{s},{h},{e,m}{e,s},{e,h},{m,s},{m,h},{s,h}, {e,m,s}{e,m,h},{m,s,h},{e,s,h}}

Let Y = {e,m,s,h} , σ = { ∅ ,Y, {e}}andσ ' = {∅,Y,{m,s,h}}

Let f : (X, τ) → (Y, σ) be defined as f(e) = h,f(m) = s,f(s) = e and f(h) = m.

Here {m,s,h}is closed in (Y, σ) but f $^{-1}$ ({m,s,h}) = {e,m,h}is not closed in (X,τ).

Hence f is not continuous. But {e,m,h}is γ˙grw closed set. Therefore f is γ˙grw continuous.

The proof of the following theorems is based on the above definitions and known results,

Theorem 3.2

(i) Every rgw,θg and α continuous is γ˙grw continuous.
(ii) Every γ,gα and αg continuous is γ˙grw continuous.
(iii)Every g,δg and semi closed continuous is γ˙grw continuous.
(iv)Every w continuous is γ˙grw continuous.
(v) Every wg and sg continuous is γ˙grw continuous.

Remarks 3.2

The following examples 3.2 to 3.6 shows that the converse of the above theorem need not be true (except rgw continuous).

Example 3.2

Let X = {e,m,s,h} , τ = { ∅ ,X, {e},{m},{e,m},{e,m,s}}and

τ' = {∅,X,{h},{s,h},{e,s,h},{m,s,h}}

Let Y = {e,m,s,h} , σ = { ∅ ,Y, {h}}andσ ' = {∅,Y,{e,m,s}}
(i)   Let f : (X, τ) → (Y, σ) be defined as f(e) = e, f(m) = h, f(s) = m and f(h) = s.
Here {e,m,s} is closed in (Y, σ) and f $^{-1}$ ({e,m,s}) = {e,s,h}is closed in (X,τ).
Hence f is rgw continuous also{e,s,h}is γ˙grw closed . Therefore "every rgw continuous is γ˙grw continuous"
(ii)   Let f : (X, τ) → (Y, σ) be defined as f(e) = e, f(m) = m, f(s) = s and f(h) = h.
In this case {e,m,s} is closed in (Y, σ) but f $^{-1}$ ({e,m,s}) = {e,m,s}is not closed in (X,τ). Thusθg is not continuous. But {e,m,s}is γ˙grw closed . (i.e.) f is γ˙grw continuous.
(iii)   Let Y = {e,m,s,h} , σ = { ∅ ,Y, {h},{e,h}}and σ ' = {∅,Y,{m,s},{e,m,s}}
Let f : (X, τ) → (Y, σ) be defined as f(e) = s, f(m) = m, f(s) = e and f(h) = h.
Here {m,s}and {e,m,s} is closed in (Y, σ) how ever f -1 ({m,s}) = {e,m} and f -1 ({e,m,s}) = {e,m,s} is not closed in (X,τ).Which is γ*grw continuous but not α continuous.. (i,e) f is γ*grw continuous.

Example 3.3
Consider X = {e,m,s,h} , τ = { ∅ ,X, {e},{m},{e,m},{e,m,s}}and
τ' = {∅,X,{h},{s,h},{e,s,h},{m,s,h}}
Let Y = {e,m,s,h} , σ = { ∅ ,Y, {e},{m},{e,m}}and σ ' = {∅,Y,{s,h},{m,s,h},{e,s,h}}
        (i)   Let f : (X, τ) → (Y, σ) be defined as f(e) = s, f(m) = m, f(s) = e and f(h) = h.

Here {s,h},{m,s,h}and {e,s,h} are closed in (Y, σ) but f -1 ({s,h}) = {e,h,}is not closed in (X,τ), consequently f is γ*grw continuous not γ continuous.
        (ii)   Let f : (X, τ) → (Y, σ) be defined as f(e) = s, f(m) = m, f(s) = e and f(h) = h.

We see that {s,h}and {m,s,h} is closed in (Y, σ) but f -1 ({s,h}) = f -1 ({e,s,h}) ={e,h,} and f -1 ({m,s,h}) = {e,m,h,} is not closed in (X,τ).Which is γ*grw continuous but not gα continuous. (i,e) f is γ*grw continuous

(iii)   Let f : (X, τ) → (Y, σ) be defined as f(e) = s, f(m) = m, f(s) = e and f(h) = h.

Now {s,h}and {m,s,h} is closed in (Y, σ) but f -1 ({s,h}) = f -1 ({e,s,h}) = {e,h,} and f -1 ({m,s,h}) = {e,m,h,} is not closed in (X,τ).Which is γ*grw continuous but notαg continuous. (i,e) f is γ*grw continuous

Example 3.4
Take X = {e,m,s,h} , τ = { Ø ,X, {e},{m},{e,m},{e,m,s}}and

τ' = {Ø,X,{h},{s,h},{e,s,h},{m,s,h}}, Let Y = {e,m,s,h} , σ = { Ø ,Y, {s}}andσ ' = {Ø,Y,{e,m,h}}. Let f : (X, τ) → (Y, σ) be defined as f(e) = e, f(m) = h, f(s) = m and f(h) = s.
Here {e,m,h} is closed in (Y, σ) but f $^{-1}$ ({e,m,h}) = {e,m,s}is not closed in (X,τ).Hence f is not g, δg and semi closed continuous. But {e,m,s}is γ˙grw closed. Obviously f is γ˙grw continuous.

Example 3.5
let X = {e,m,s,h} , τ = { Ø ,X, {m},{e,m},{e,m,s}}and
$\tau^{/}$ = {Ø,X,{h},{s,h},{e,s,h}}
Let Y = {e,m,s,h} , σ = { Ø ,Y, {e}{e,h},}andσ ' = {Ø,Y,{m,s,h},{m,s}}
Let f : (X, τ) → (Y, σ) be defined as f(e) = e,f(m) = m,f(s) = s and f(h) = h.
Certainly {m,s,h}and {m,s} are closed in (Y, σ). Nowf $^{-1}$ ({m,s}) = {m,s} and f $^{-1}$ ({m,s,h}) = {m,s,h}are not closed in (X,τ). Hence f is not w continuous. (i.e,) f is γ˙grw continuous.

Example 3.6
Let X = {e,m,s,h} , τ = { Ø ,X, {e},{m},{e,m},{e,m,s}}and
τ' = {Ø,X,{h},{s,h},{e,s,h},{m,s,h}}
Let Y = {e,m,s,h} , σ = { Ø ,Y, {s},{m,s}}andσ ' = {Ø,Y,{e,h}{e,m,h}}
Let f : (X, τ) → (Y, σ) be defined as f(e) = e,f(m) = h,f(s) = m and f(h) = s.
Here {e,h} is closed in (Y, σ) but f $^{-1}$ ({e,h}) = {e,m,}is not closed in (X,τ).
Which is γ˙grw continuous but not wg and sg continuous. (i,e) f is γ˙grw continuous.

Remark 3.3
Thus fig (i) represents the relationship between γ˙grwcontinuous and g ,δg, semi continuous,θg,γ,and α continuous.

Remark 3.4
Relationship between γ˙grwcontinuous and rgw , sg, w, wg, gα and αg continuous are represented in Thus fig (ii).

CONCLUSION

We found the relation between γ˙grw continuous set and various sets. These results can be extended to other TS in general, to Grill Topological spaces in particular.

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Fig(i). γ^*grw continuous	**Fig (ii).** γ^*grw continuous

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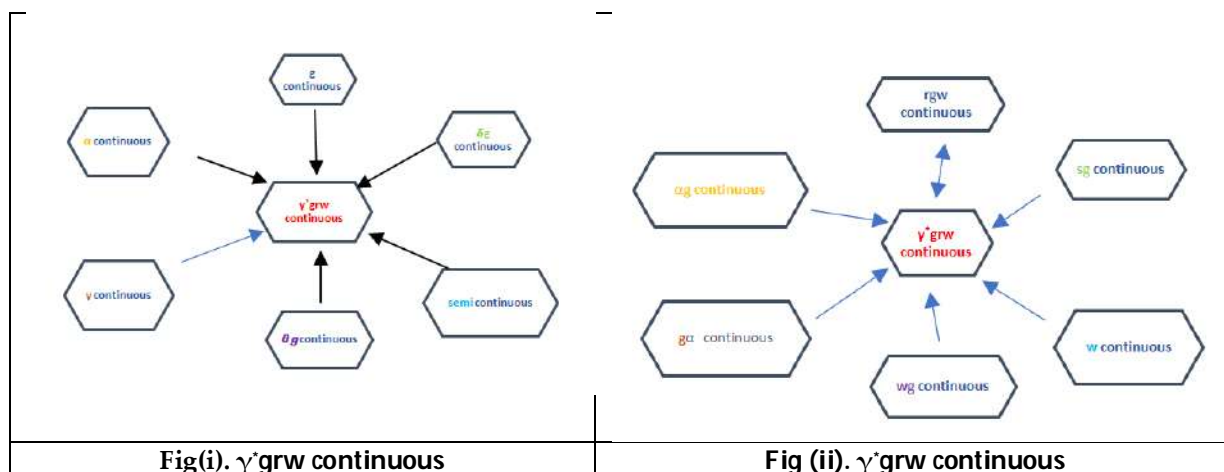
Further Studies on Continuity of γ *grw Closed Set with Grill

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ABSTRACT

This research paper deals with continuous (Cts) functions in Grill Topological space (GTS). Further investigated by introducing G γ *grwc (Grill γ *generalized regular weakly closed) set , useful results are derived and it is a Continuous study of [3] "On continuity of γ *grwc sets."

Keywords: G γ *grwc set.

INTRODUCTION

The study of shapes and spaces is known as topology and its characteristics are completely kept during steady distortion, like bending and stretching but not tearing. After the introduction of Generalized closed set by Levine (1970) it has become one of an interesting area in the field of topology.Choquet, one who explored Grill as a Tool like nets and filters. This paper deals withContinuity of G γ * grwc sets.Cl and I represents closure and interior of a set. Review of literature and preliminaries, Gγ* grwc continuous function and conclusion were presented in section 2,3 and 4 respectively.

Review of Literature and preliminaries
Related to study area a few literatures, preliminaries and definition were presented. In 1947 Choquet introduced Grill, since then many topologists started to do more research work On continuous function using GTS. Dhananjoy mandal and M.N.Mukerjee (2012) [2] have studied a new class of generalized closed sets in TS X and defined in terms of grill G on X and Presented the characterization of Regular and Normal spaces. M.O. Mustafa and

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R.B.Esmaeel(2021) [8] have conducted a research work on" some properties in Grill topological open and closed sets" and given its relationship with continuous function Gg-continuous function, Gg strongly continuous function, Gg-Irresolute function. Nagarajan Kalaivani, Khaleel Fayaz UrRahaman, Lanka cepova and Robert cep (2022) [9] have investigated GS $_\beta$ continuous function along with this the theory of GS$_\beta$ continuous mapping was introduced and derived properties in GTS. M.K. Eswarlal and R.Bhavani (2023) [3] have introduced γ ˙grwc set and studied its Continuity in a Topological spaces.

Basic concepts of Topology
Definition 2.1 Closure ($C\iota$) and Interior (I) of a set.[3]
Given a subset A of a topological space X, $C\iota$ (A) is defined as the intersection of all closed sets containing A and I(A) is defined as the union of all open sets contained in A.
Definition 2.2
Let (X,τ) be TS and a subset A of X is said to be
(i) α open [7] if $A \subseteq I(C\iota(I(A)))$ and α closed [7] set if $C\iota(I(C\iota(A))) \subseteq A$.
(ii)   Weakly closed (w-closed) [10],if$C\iota(A) \subseteq H$ whenever $A \subseteq H$ and H is semi open in (X,τ).
(iii) γ open [4],if $A \subseteq I(C\iota(A)) \cup C\iota(I(A))$ and γ closed [4] if $C\iota(I(A)) \cap I(C\iota(A)) \subseteq A$.
(iv)   Semi open set [5] if $A \subseteq C\iota(I(A))$ and semi closed set [5] if $I(C\iota(A)) \subseteq A$.

Definition 2.3
        Let (X,τ) be TS &A⊆X is called
(i)   Generalized closed set (g closed) [6] if $C\iota(A) \subseteq U$ whenever $A \subseteq U$ and U is open in (X,τ).
(ii)   Generalized α closed (g α closed)[5] if α cl(A)$\subseteq$ H and H is α open in (X,τ)
(iii)   Regular generalized weakly set (rgw closed) [12], if $C\iota(I(A)) \subseteq U$ whenever $A \subseteq U$ and U is regular semi open in X.
(iv)   sg closed [1], if $sC\iota(A) \subseteq U$ whenever $A \subseteq U$ and U is semi open in X.

Preposition 2.1
(i)   EveryClosed, semi closed ,γ, α, and w are γ˙grw closed.
(ii)   Every g, sg, rgw and g α closed are γ˙grw closed.

Definition 2.4
Grill :[11] A collection G of non-empty subsets of a space X is called a Grill on X if
(i) $A \in G$ and $A \subseteq B \subseteq X$ implies $B \in G$, and
(ii)   A, $B \subseteq X$ and $A \cup B \in G$ implies $A \in G$ or $B \in G$.
Definition 2.5
[11] Let G be a Grill on a topological space (X,τ). A mapping Φ: P(x) →P(x). Denoted by $\Phi_G(A,τ)$ (for A $\in$or P(x)) or Φ_G (A) or simply by Φ (A) is defined by
Φ_G (A) = {x∈X: A ∩ U ∈ G, for all U ∈ τ(x)}.

G γ ˙grw ccontinuous(Cts)function.
G γ ˙grwc continuous function is introduced and studied.

Definition 3.1
Let G be a Grill on X and A be a subset of X in a topological space (X,τ), is said to be   G γ ˙grwcif Φ_G (A) $\subseteq$ H whenever $A \subseteq H$ and H is γ closed in X.
Example 3.1
Let X = {j, o, v, z} , τ = { ∅ ,X, {j},{o},{j, o},{j, o, v}} and
G = {∅,X,{j},{o},{j, o},{j, v},{j, z},{j, o, v},{j, o, z},{j, v, z}}
Closed sets of (X, τ) are { ∅ ,X, {z},{v, z},{o, v, z},{j, v, z}}
Gγ˙grw closed sets of (X,τ) are {∅,X,{j},{o},{v},{z},{j,v},{j,z},{o,v},{o,z},{v,z},

{j,o,z},{o,v,z},{j,v,z}}

Preposition 3.1

Every closed set is G γ ˚grw closed.

Proof:

Let A be a closed set in X and A ⊆H.

since A is closed this implies that $C\iota$(A) ⊆ A ⊆H, where H is γ closed.

But Φ_G (A) ⊆$C\iota$ (A) ⊆ H. (i.e) Φ_G (A) ⊆ H. Thus, A is G γ ˚grw closed.

Remark 3.1

The converse of preposition3.1 is not true.

Example 3.2

Let X = {j, o, v, z} , τ = { ∅ ,X, {j},{o},{j, o},{j, o, v}} and

G = {∅,X,{j},{o},{j, o},{j, v},{j, z},{j, o, v},{j, o, z},{j, v, z}}

Take A = {o}, Here {o} is not closed, but it is G γ ˚grw closed.

Preposition 3.2

(i)   Every α, semi closed , γ and w are G γ˚grw closed.

(ii)   Every rgw, g α , sg and g closed are Gγ˚grw closed.

Remark 3.2

The converse of Preposition 3.1 & 3.2 areneed be not true.

Definition 3.2

A function f : (X , τ , G) → (Y , σ) is called Gγ˚grwc continuous (Cts) if the inverse image of every closed set in (Y , σ) is Gγ˚grw closed in (X , τ , G).

Theorem 3.1

EveryCts function is Gγ˚grwcCts.

Proff :

Let f : (X , τ , G) → (Y , σ) be a Cts map.

Let H be a closed set in (Y , σ). Then f^{-1} (H) is closed in (X , τ , G).

Since every closed set is G γ˚grw closed. (i. e) f^{-1} (H) is a G γ˚grw closed.

Therefore f is Gγ˚grwcCts.

Remarks 3.3

Converse of Th 3.1 need not be true.

Example 3.3

Let X = {j, o, v, z} , τ = { ∅ ,X, {j},{o},{j, o},{j, o, v}}, σ = { ∅ , Y , v } and

G = {∅,X,{j},{o},{j, o},{j, v},{j, z},{j, o, v},{j, o, z},{j, v, z}}

Let f :(X, τ , G) → (Y, σ) be defined as f(j) = j, f(o) = o, f(v) = v and f(z) = z .

. f $^{-1}$ (j,o,z) = { j,o,z }. Which is not closed in X. That is f is notCts.

But {j,o,z} is G γ˚grw closed. Therefore f is G γ˚grwcCts.

Theorem 3.2

(i)   Every αcCtsis Gγ˚grwcCts.

(ii)   Every semi closedCtsis Gγ˚grwcCts.

(iii)   Every wcCtsis Gγ˚grwcCts.

(iv)   Every γcCtsis Gγ˚grwcCts .

Remarks 3.2

Proof of Th 3.2 (i) to (iii) follows from above definitions and known results

and its converse need not be true.

Example 3.3

Let X = {j, o, v, z} , τ = { ∅ ,X, {j},{o},{j, o},{j, o, v}}, σ = { ∅ , Y , j } and

G = {∅,X,{j},{o},{j, o},{j, v},{j, z},{j, o, v},{j, o, z},{j, v, z}}

Let f :(X, τ , G) → (Y, σ) be defined as f(j) = o, f(o) = j, f(v) = v and f(z) = v.

(i)   f $^{-1}$ (o, v, z) = { j, v}. Which is not α closed. That is f is not α Cts.Therefore f is G γ˚grwcCts.

(ii)   f $^{-1}$ (j,o, z) = { j, o, v } and f $^{-1}$ (j , o) = { j , o } Which is not w closed. That is f is w Ctsbut not G γ˚grwcCts .

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Let X = {j, o, v, z} , τ = { ∅ ,X, {j},{o},{j, o},{j, o, v}}, σ = { ∅ , Y , j v } and
G = {∅,X,{j},{o},{j, o},{j, v},{j, z},{j, o, v},{j, o, z},{j, v, z}}
Let f :(X, τ , G) → (Y, σ) be defined as f(j) = j, f(o) = o, f(v) = v and f(z) =z.
(i) f^{-1}(j, o, z) = { j, o,z}. Which is not semi closed .That is f is notsemi closed Cts. Therefore f is G γˇgrwCts.
(ii) f^{-1}(j, o, z) = { j, o, z } and f^{-1}(j ,o) = { j, o } Which is not both γas well as G γˇgrw closed . Therefore fis not γand G γˇgrwcCts .

Remark 3.3
Thus fig (i) depicts the relationship between GγˇgrwcCtswith other sets.

Theorem 3.3
(i)   Every gcCtsis GγˇgrwCts.
(ii)   Every sgcCtsis GγˇgrwCts.
(iii)   Every rgwcCts isGγˇgrwCts.
(iv)   Every g αcCtsis GγˇgrwCts.

Remarks 3.4
Proof of Th 3.3 (i) to (iv) follows from above definitions and known results and its converse need not be true.

Example 3.4
Let X = {j, o, v, z} , τ = { ∅ ,X, {j},{o},{j, o},{j, o, v}}, σ = { ∅ , Y , j } and
G = {∅,X,{j},{o},{j, o},{j, v},{j, z},{j, o, v},{j, o, z},{j, v, z}}
Let f :(X, τ , G) → (Y, σ) be defined as f(j) = o, f(o) = j, f(v) = v and f(z) = v.
(i) f^{-1}(o, v , z) = { j, v }. Which is not g closed. That is f is not g continuous. Therefore f is G γˇgrwcCts.
(ii) f^{-1}(j, o, z) = { j, o, z } and f^{-1}(j , o) = { j, o } Which is not both sg as well as G γˇgrw closed . (i,e) f is not sgand G γˇgrwcCts.
(iii) f^{-1}(j, o, z) = { j, o, z } and f^{-1}(j , o) = { j, o } Which is not both g α as well as G γˇgrw closed . Therefore f is not g α and G γˇgrwcCts.
(iv)   Let σ = { ∅ , Y , {j}, {j, z } }and f^{-1}(j, v, z) = { j, v }, f^{-1}(o, v) = { j, v }. Which is not rgw closed. That is f is not rgw continuous. That is f is G γˇgrwcCts.

Remark 3.5
 fig (ii) shows the association ofGγˇgrwcCts with other sets

CONCLUSION

Gγˇgrw Cts function was introduced and investigated its link between other sets were presented.This study can be extended to any topological space.

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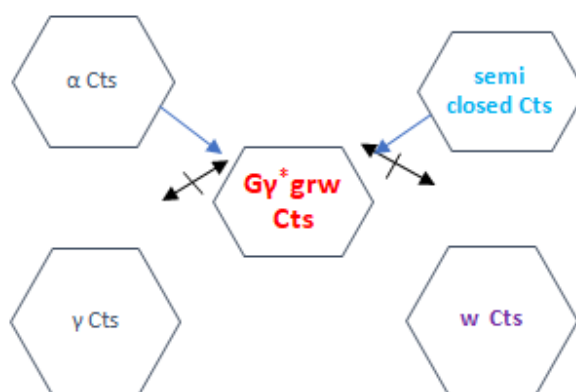
Fig (i) depicts the relationship between Gγ˚grwcCtswith other sets.
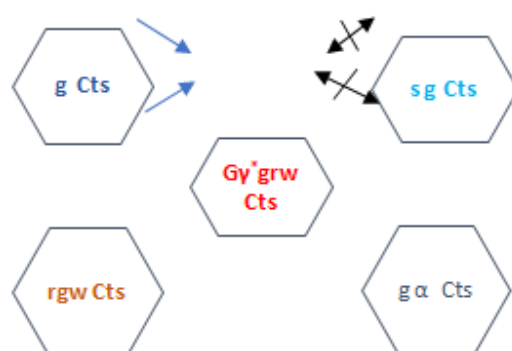
Fig (ii) shows the association of Gγ˚grwcCts with other sets

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Common Fixed Point Theorems for Occasionally Weakly Compatible Mappings in Neutrosophic Cone Metric Spaces

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Common Fixed Point Theorems for Occasionally Weakly Compatible Mappings in Neutrosophic Cone Metric Spaces

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Abstract. The idea of Neutrosophic Cone Metric Space is introduced in this study. In order to illustrate fixed point, the idea of occassionally weakly compatible is also used.

Keywords: Fixed point; Neutrosophic Metric Space; Compatible Mappings; Occasionally weakly compatible mapping.

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1. Introduction

As it lays the groundwork for modern mathematics, classical set theory progresses through numerous extensions. Zadeh [32] first suggested the idea of Fuzzy Sets (FS) in 1965. Fuzzy set theory was crucially applied in all branches of science and engineering. The idea of Fuzzy Meric Space (FMS) was first put forth in 1975 by Kramosil and Michalek[14]. This important characteristic of assigning graded membership polarised the academics, prompting them to develop different analyses and applications for various types of fuzzy metric spaces. George and Veeramani [4] reconstructed FMS using triangular criteria. Following then, other researchers explored the properties of FMS and produced numerous fixed point results.

Intuitionistic Fuzzy Sets, which expanded fuzzy set theory to include the idea of non-membership grade, were introduced by Atanassov [1] in 1983. Since then, a lot of work has been put into coming to new findings and extending existing ideas to the intuitionistic

fuzzy environment. Park [17] developed intuitionistic fuzzy metric space (IFMS), and several fixed point findings based on the concept of IFS were published. Alaca et al. [2] and other researchers have developed several fixed point theorems in FMS and IFMS. Tarkan Oner et al. [16] developed the idea of fuzzy cone metric space. By Priyobartal et al. [18], several fixed point outcomes in fuzzy cone metric space were studied. Neutrosophy is an extension of the intuitionistic fuzzy set presented by Florentin Smarandache [20] in 1998. It holds that there exists a continuum-power spectrum of neutralities between a notion and its opponent.

According to this theory, there is a continuum-power spectrum of neutralities that might exist between a concept and its adversary. Neutralities were added to the Intuitionistic Fuzzy Set by neutrosophy, which energised the scientific community, and the field is now thriving with countless investigations, analyses, computing techniques, and applications. Neutrosophic metric space was established by Kirisci et al. [15] in 2019 as an expansion of intuitionistic fuzzy metric space that produces fixed point theorms in complete neutrosophic metric space. In Neutrosophic Metric Spaces(NMS), Sowndrarajan, Jeyaraman, and Florentin Smarandache demonstrated fixed point findings for contraction theorems.

This paper introduces the idea of Neutrosophic Cone Metric Space (NCMS) and explains its key components.. On Neutrosophic Cone Metric Space, the Banach contraction theorem and a few fixed point results are presented and demonstrated. Furthermore, by utilising the idea of occasionally weakly compatible on two self mappings, fixed point results on NCMS have been demonstrated.

2. **Preliminaries**

Definition 2.1. Think about a non-empty set that presummably serves as a common fixed point of mappings $\mathfrak{G} : \daleth \times \daleth \to \daleth$ and $\mathfrak{F} : \daleth \to \daleth$ if $\varrho = \mathfrak{F}(\varrho) = \mathfrak{G}(\varrho, \varrho)$.

Definition 2.2. If the mappings $\mathfrak{G} : \daleth \times \daleth \to \daleth$ and $\mathfrak{F} : \daleth \to \daleth$ in a nonempty set are considered to be commutative, then $\mathfrak{F}(\mathfrak{G}(\varrho, \varsigma)) = \mathfrak{G}(\mathfrak{F}(\varrho), \mathfrak{F}(\varsigma))$ for all $\varrho, \varsigma \in \daleth$.

Definition 2.3. Consider a non-empty set $\daleth$ and $\mathfrak{G}, \mathfrak{F}$ self-maps of $\daleth$. ϱ serves as a coincidence point of $\mathfrak{G}$ and $\mathfrak{F}$ if and only if $\mathfrak{G}(\varrho) = \mathfrak{F}(\varrho)$ where $\varrho \in \daleth$. Then $\mathfrak{w} = \mathfrak{G}(\varrho) = \mathfrak{F}(\varrho)$ is referred to as a point of coincidence of $\mathfrak{G}$ and $\mathfrak{F}$.

Definition 2.4. Let $\mathfrak{G}$ and $\mathfrak{F}$ represents two set's self- maps of a set $\daleth$. $\mathfrak{G}$ and $\mathfrak{F}$ are referred to be occasionally weakly compatible if and only if a point is made $\varrho \in \daleth$ which is an instance of coincidence point of $\mathfrak{G}$ and $\mathfrak{F}$, where $\mathfrak{G}$ and $\mathfrak{F}$ commute.

Definition 2.5. Consider a cone metric space $(\daleth, d)$ Next, for each $\mathfrak{n}_1 \gg 0$ and $\mathfrak{n}_2 \gg 0$, $\mathfrak{n}_1, \mathfrak{n}_2 \in \mathfrak{E}$, a thing exists $\mathfrak{n} \gg 0$, $\mathfrak{n} \in \mathfrak{E}$ like that $\mathfrak{n} \ll \mathfrak{n}_1$ and $\mathfrak{n} \ll \mathfrak{n}_2$.

Lemma 2.6. *Assume that $\daleth$ is a collection of $\mathfrak{G}, \mathfrak{F}$'s occasionally weakly compatible self maps. If $\mathfrak{G}$ and $\mathfrak{F}$ share a unique fixed point $\mathfrak{w}$, then $\mathfrak{G}$ and $\mathfrak{F}$ share a special coincidence $\mathfrak{w} = \mathfrak{G}(\varrho) = \mathfrak{F}(\varrho)$.*

Definition 2.7. Let $* : [0,1] \times [0,1] \to [0,1]$ where it meets the following requirements be a continuous t-norm [CTN]:

(i) $*$ is commutative and associative,

(ii) $*$ is continuous,

(iii) $\varepsilon_1 * 1 = \varepsilon_1$ for all $\varepsilon_1 \in [0,1]$,

(iv) $\varepsilon_1 * \varepsilon_2 \le \varepsilon_3 * \varepsilon_4$ whenever $\varepsilon_1 \le \varepsilon_3$ and $\varepsilon_2 \le \varepsilon_4$, for every $\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4 \in [0,1]$.

Definition 2.8. Let $\diamond : [0,1] \times [0,1] \to [0,1]$ where it meets the following requirements be a continuous t-conorm [CTC]:

(i) $\diamond$ is commutative and associative,

(ii) $\diamond$ is continuous,

(iii) $\varepsilon_1 \diamond 0 = \varepsilon_1$ for all $\varepsilon_1 \in [0,1]$,

(iv) $\varepsilon_1 \diamond \varepsilon_2 \le \varepsilon_3 \diamond \varepsilon_4$ whenever $\varepsilon_1 \le \varepsilon_3$ and $\varepsilon_2 \le \varepsilon_4$, for each $\varepsilon_1, \varepsilon_2, \varepsilon_3, \varepsilon_4 \in [0,1]$.

3. Neutrosophic Cone Metric Spaces

Definition 3.1. It is claimed that a 6-tuple $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ is a Neutrosophic Cone Metric Space, a cone of E is P, $\daleth$ can be any non empty set, $*$ be a neutrosophic CTN, $\diamond$ be a neutrosophic CTC and Ξ, Θ and Υ are neutrosophic sets on $\daleth^2 \times int(\mathfrak{P})$ where it meets the criteria listed below:

for every $\varrho, \varsigma, \delta, \omega \in \daleth, \alpha, \mu \in int(\mathfrak{P})$.

(i) $0 \le \Xi(\varrho, \varsigma, \alpha) \le 1; \ 0 \le \Theta(\varrho, \varsigma, \alpha) \le 1; \ 0 \le \Upsilon(\varrho, \varsigma, \alpha) \le 1;$

(ii) $\Xi(\varrho, \varsigma, \alpha) + \Theta(\varrho, \varsigma, \alpha) + \Upsilon(\varrho, \varsigma, \alpha) \le 3;$

(iii) $\Xi(\varrho, \varsigma, \alpha) > 0;$

(iv) $\Xi(\varrho, \varsigma, \alpha) = 1$ if and only if $\varrho = \varsigma;$

(v) $\Xi(\varrho, \varsigma, \alpha) = \Xi(\varsigma, \varrho, \alpha);$

(vi) $\Xi(\varrho, \varsigma, \alpha) * \Xi(\varsigma, \delta, \mu) \le \Xi(\varrho, \delta, \alpha + \mu)$, for all $\alpha, \mu > 0;$

(vii) $\Xi(\varrho, \varsigma, \cdot) : int(\mathfrak{P}) \to (0,1]$ is neutrosophic continuous;

(viii) $\lim\limits_{\alpha \to \infty} \Xi(\varrho, \varsigma, \alpha) = 1$ for all $\alpha > 0;$

(ix) $\Theta(\varrho, \varsigma, \alpha) < 1;$

(x) $\Theta(\varrho, \varsigma, \alpha) = 0$ if and only if $\varrho = \varsigma;$

(xi) $\Theta(\varrho, \varsigma, \alpha) = \Theta(\varsigma, \varrho, \alpha);$

(xii) $\Theta(\varrho,\varsigma,\alpha) \diamond \Theta(\varsigma,\delta,\mu) \geq \Theta(\varrho,\delta,\alpha+\mu)$, for all $\alpha,\mu > 0$;

(xiii) $\Theta(\varrho,\varsigma,\cdot) : int(\mathfrak{P}) \to (0,1]$ is neutrosophic continuous;

(xiv) $\lim\limits_{\alpha\to\infty} \Theta(\varrho,\varsigma,\alpha) = 0$ for all $\alpha > 0$;

(xv) $\Upsilon(\varrho,\varsigma,\alpha) < 1$;

(xvi) $\Upsilon(\varrho,\varsigma,\alpha) = 0$ if and only if $\varrho = \varsigma$;

(xvii) $\Upsilon(\varrho,\varsigma,\alpha) = \Upsilon(\varsigma,\varrho,\alpha)$;

(xviii) $\Upsilon(\varrho,\varsigma,\alpha) \diamond \Upsilon(\varsigma,\delta,\mu) \geq \Upsilon(\varrho,\delta,\alpha+\mu)$, for all $\alpha,\mu > 0$;

(xix) $\Upsilon(\varrho,\varsigma,\cdot) : int(\mathfrak{P}) \to (0,1]$ is neutrosophic continuous;

(xx) $\lim\limits_{\alpha\to\infty} \Upsilon(\varrho,\varsigma,\alpha) = 0$ for all $\alpha > 0$;

(xxi) If $\alpha \leq 0$ then $\Xi(\varrho,\varsigma,\alpha) = 0; \Theta(\varrho,\varsigma,\alpha) = 1; \Upsilon(\varrho,\varsigma,\alpha) = 1$.

Then, (Ξ,Θ,Υ) is referred to as a NCMS on $\daleth$. The mappings Ξ, Θ and Υ represents degree of closedness, neturalness and non-closedness between ϱ and ς in relation to α respectively.

Example 3.2. Consider a metric space $(\daleth, d)$. Let $\mathfrak{E} = \mathfrak{R}$ and $\mathfrak{P} = [0,\infty)$. Define $\omega * \sigma = \min\{\omega,\sigma\}$ and $\omega \diamond \sigma = \max\{\omega,\sigma\}$, then every neutrosophic metric spaces became an NCMS.

Example 3.3. $\mathfrak{P}$ could be an any cone, $\daleth = N$. Define $\omega * \sigma = \min\{\omega,\sigma\}$ and $\omega \diamond \sigma = \max\{\omega,\sigma\}$, $\Xi, \Theta, \Upsilon : \daleth^2 \times int(\mathfrak{P}) \to [0,1]$ defined by

$$\Xi(\varrho,\varsigma,\alpha) = \begin{cases} \dfrac{\varrho}{\varsigma}, & \text{if } \varrho \leq \varsigma \\ \dfrac{\varsigma}{\varrho}, & \text{if } \varsigma \leq \varrho \end{cases} \qquad \Theta(\varrho,\varsigma,\alpha) = \begin{cases} \dfrac{\varsigma - \varrho}{\varsigma}, & \text{if } \varrho \leq \varsigma \\ \dfrac{\varrho - \varsigma}{\varrho}, & \text{if } \varsigma \leq \varrho \end{cases} \qquad \Upsilon(\varrho,\varsigma,\alpha) = \begin{cases} \dfrac{\varsigma - \varrho}{\varrho}, & \text{if } \varrho \leq \varsigma \\ \dfrac{\varrho - \varsigma}{\varsigma}, & \text{if } \varsigma \leq \varrho \end{cases}$$

for all $\varrho, \varsigma \in \daleth$ and $\alpha \gg 0$. Then $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ be a NCMS.

Example 3.4. Assume $\mathfrak{E} = \mathfrak{R}^2$. Then $\mathfrak{P} = \{(\rho_1, \rho_2) : \rho_1, \rho_2 \geq 0\} \subset \mathfrak{E}$ with normal constant $\mathfrak{P} = 1$, let $\mathfrak{P}$ be a normal cone assume $\daleth = \mathfrak{R}$, $\omega * \sigma = \min\{\omega,\sigma\}$, $\omega \diamond \sigma = \max\{\omega,\sigma\}$ and $\Xi, \Theta, \Upsilon : \daleth^2 \times int(\mathfrak{P}) \to [0,1]$ defined by $\Xi(\varrho,\varsigma,\alpha) = \dfrac{1}{e^{\frac{|\varrho-\varsigma|}{\|\alpha\|}}}, \Theta(\varrho,\varsigma,\alpha) = \dfrac{e^{\frac{|\varrho-\varsigma|}{\|\alpha\|}} - 1}{e^{\frac{|\varrho-\varsigma|}{\|\alpha\|}}}$ and $\Upsilon(\varrho,\varsigma,\alpha) = e^{\frac{|\varrho-\varsigma|}{\|\alpha\|}} - 1$, for each $\varrho, \varsigma \in \daleth$ and $\alpha \gg 0$. Then $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ is a NCMS.

Definition 3.5. Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. For $\alpha \gg 0$, the open ball $\mathcal{O}(\varrho, \mathfrak{r}, \alpha)$ where ϱ is its center and $\mathfrak{r} \in (0,1)$ is its radius as $\mathcal{O}(\varrho, \mathfrak{r}, \alpha) = \{\varsigma \in \daleth : \Xi(\varrho,\varsigma,\alpha) > 1 - \mathfrak{r}, \Theta(\varrho,\varsigma,\alpha) < \mathfrak{r}$ and $\Upsilon(\varrho,\varsigma,\alpha) < \mathfrak{r}\}$.

Definition 3.6. Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. Let $\varrho \in \daleth$ and $\{\varrho_n\}$ be a sequence in $\daleth$. Then $\{\varrho_n\}$ suppose converges to ϱ if for any $\alpha \gg 0$ and $\mathfrak{r} \in (0,1)$ are present, a natural integer n_0 exists such that $\Xi(\varrho_n, \varrho, \alpha) > 1 - \mathfrak{r}, \Theta(\varrho_n, \varrho, \alpha) < \mathfrak{r}$ and $\Upsilon(\varrho_n, \varrho, \alpha) < \mathfrak{r}$ for all $n > n_0$. Then $\lim\limits_{n\to\infty} \varrho_n = \varrho$ or $\varrho_n \to \varrho$ as $n \to \infty$.

Definition 3.7. Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. Let $\varrho \in \daleth$ and $\{\varrho_n\}$ be a sequence in $\daleth$. If for any $0 < \varepsilon < 1$ and any $\alpha \gg 0$ a natural number n_0 like that exists and $\Xi(\varrho_n, \varrho_m, \alpha) >$

$1 - \varepsilon, \Theta(\varrho_n, \varrho_m, \alpha) < \varepsilon$ and $\Upsilon(\varrho_n, \varrho_m, \alpha) < \varepsilon$ for each $n, m > n_0$ then $\{\varrho_n\}$ referred to as a Cauchy sequence.

Definition 3.8. Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. One calls $\daleth$ complete if each and every Cauchy sequence converges.

Definition 3.9. Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. We refer to a subset Φ of $\daleth$ as $\mathfrak{FC}$ - bounded assuming if $\alpha \gg 0$ and $\mathfrak{r} \in (0, 1)$ are present like that $\Xi(\varrho, \varsigma, \alpha) > 1 - \mathfrak{r}, \Theta(\varrho, \varsigma, \alpha) < \mathfrak{r}$ and $\Upsilon(\varrho, \varsigma, \alpha) < \mathfrak{r}$ for each $\varrho, \varsigma \in \Phi$.

Definition 3.10. Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ and $\mathfrak{h} : \daleth \to \daleth$ be a self mapping. Then neutrosophic cone contractive is the name given to $\mathfrak{h}$ and assuming there is $\rho \in (0, 1)$ like that
$$\frac{1}{\Xi(\mathfrak{h}(\varrho), \mathfrak{h}(\varsigma), \alpha)} - 1 \leq \rho \left(\frac{1}{\Xi(\varrho, \varsigma, \alpha)} - 1 \right), \Theta(\mathfrak{h}(\varrho), \mathfrak{h}(\varsigma), \alpha) \leq \rho\Theta(\varrho, \varsigma, \alpha) \text{ and } \Upsilon(\mathfrak{h}(\varrho), \mathfrak{h}(\varsigma), \alpha) \leq \rho\Upsilon(\varrho, \varsigma, \alpha)$$ for each $\varrho, \varsigma \in \daleth$ and $\alpha \gg 0$. ρ is referred to as the $\mathfrak{h}$ contractive constant.

Lemma 3.11. *Consider any two points $\varrho, \varsigma \in \daleth$ and $\rho \in (0, 1)$ such that $\Xi(\varrho, \varsigma, \rho\alpha) \geq \Xi(\varrho, \varsigma, \alpha), \Theta(\varrho, \varsigma, \rho\alpha) \leq \Theta(\varrho, \varsigma, \alpha)$ and $\Upsilon(\varrho, \varsigma, \rho\alpha) \leq \Upsilon(\varrho, \varsigma, \alpha)$. Then $\varrho = \varsigma$.*

Theorem 3.12. *Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. Define $\tau = \{\Phi \subseteq \daleth : \varrho \in \Phi$ iff a thing exists $\mathfrak{r} \in (0, 1)$ and $\alpha \gg 0$ like that $\mathcal{O}(\varrho, \mathfrak{r}, \alpha) \subset \Phi\}$, which is a topology on $\daleth$.*

Proof. Let $\varrho \in \phi$. Hence $\phi = \mathcal{O}(\varrho, \mathfrak{r}, \alpha) \subset \phi$ and $\phi \in \tau$.
Since for any $\varrho \in \daleth$, and $\mathfrak{r} \in (0, 1)$, $\alpha \gg 0$ are present then $\mathcal{O}(\varrho, \mathfrak{r}, \alpha) \subset \daleth$, then $\daleth \in \tau$. Let $\Phi, \mathcal{O} \in \tau$ and $\varrho \in \Phi \cap \mathcal{O}$, then $\varrho \in \Phi$ and $\varrho \in \mathcal{O}$ so a thing exists $\alpha_1 \gg 0, \alpha_2 \gg 0$ and $\mathfrak{r}_1, \mathfrak{r}_2 \in (0, 1)$ such that $\mathcal{O}(\varrho, \mathfrak{r}_1, \alpha_1) \subset \Phi$ and $\mathcal{O}(\varrho, \mathfrak{r}_2, \alpha_2) \subset \mathcal{O}$.
From Definition (2.5), for $\alpha_1 \gg 0, \alpha_2 \gg 0$, a thing exists $\alpha \gg 0$ such that $\alpha \gg \alpha_1, \alpha \gg \alpha_2$ and take $\mathfrak{r} = \min\{\mathfrak{r}_1, \mathfrak{r}_2\}$. Then $\mathcal{O}(\varrho, \mathfrak{r}, \alpha) \subset \mathcal{O}(\varrho, \mathfrak{r}_1, \alpha_1) \cap \mathcal{O}(\varrho, \mathfrak{r}_2, \alpha_2) \subset \Phi \cap \mathcal{O}$. Hence $\Phi \cap \mathcal{O} \in \tau$. Let $\Phi_j \in \mathfrak{r}$ for every $j \in I$ and $\varrho \in \cup_{j \in I} \Phi_j$. Afterwards, there is $i_0 \in I$ similar to $\varrho \in \Phi_{j_0}$. So, there is $\alpha \gg 0$ and $\mathfrak{r} \in (0, 1)$ like that $\mathcal{O}(\varrho, \mathfrak{r}, \alpha) \subset \Phi_{j_0}$. Since $\Phi_{j_0} \subset \cup_{j \in I} \Phi_j, \mathcal{O}(\varrho, \mathfrak{r}, \alpha) \subset \cup_{j \in I} \Phi_j$. Thus $\cup_{j \in I} \Phi_j \in \tau$. Hence, τ is therefore a topology on $\daleth$.

Theorem 3.13. *Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. Then $(\daleth, \tau)$ is Hausdorff.*

Proof. Consider a NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. Let ϱ, ς be the two separate points of $\daleth$. Then $0 < \Xi(\varrho, \varsigma, \alpha) < 1, 0 < \Theta(\varrho, \varsigma, \alpha) < 1$ and $0 < \Upsilon(\varrho, \varsigma, \alpha) < 1$. Assume $\Xi(\varrho, \varsigma, \alpha) = \mathfrak{r}_1$, $\Theta(\varrho, \varsigma, \alpha) = \mathfrak{r}_2$ and $\Upsilon(\varrho, \varsigma, \alpha) = \mathfrak{r}_3$ and $\mathfrak{r} = \max\{\mathfrak{r}_1, \mathfrak{r}_2, \mathfrak{r}_3\}$. Then for each $\mathfrak{r}_0 \in (\mathfrak{r}, 1)$, there is $\mathfrak{r}_4, \mathfrak{r}_5$ and $\mathfrak{r}_6$ such that $\mathfrak{r}_4 * \mathfrak{r}_4 \geq \mathfrak{r}_0, (1 - \mathfrak{r}_5) \diamond (1 - \mathfrak{r}_5) \leq (1 - \mathfrak{r}_0)$ and $(1 - \mathfrak{r}_6) \diamond (1 - \mathfrak{r}_6) \leq (1 - \mathfrak{r}_0)$. Assume $\mathfrak{r}_7 = \max\{\mathfrak{r}_4, \mathfrak{r}_5, \mathfrak{r}_6\}$. Think about open balls $\mathcal{O}(\varrho, 1 - \mathfrak{r}_7, \frac{\alpha}{2})$ and $\mathcal{O}(\varsigma, 1 - \mathfrak{r}_7, \frac{\alpha}{2})$. Then obviously $\mathcal{O}(\varrho, 1 - \mathfrak{r}_7, \frac{\alpha}{2}) \cap \mathcal{O}(\varsigma, 1 - \mathfrak{r}_7, \frac{\alpha}{2}) = \emptyset$. Assume that $\mathcal{O}(\varrho, 1 - \mathfrak{r}_7, \frac{\alpha}{2}) \cap \mathcal{O}(\varsigma, 1 - \mathfrak{r}_7, \frac{\alpha}{2}) \neq \emptyset$.

Then there is $\nu \in \mathcal{O}(\varrho, 1 - \mathfrak{r}_7, \frac{\alpha}{2}) \cap \mathcal{O}(\varsigma, 1 - \mathfrak{r}_7, \frac{\alpha}{2})$.

$$\mathfrak{r}_1 = \Xi(\varrho, \varsigma, \alpha)$$
$$\geq \Xi(\varrho, \nu, \frac{\alpha}{2}) * \Xi(\nu, \varsigma, \frac{\alpha}{2}) \geq \mathfrak{r}_7 * \mathfrak{r}_7 \geq \mathfrak{r}_4 * \mathfrak{r}_4 \geq \mathfrak{r}_0 > \mathfrak{r}_1,$$
$$\mathfrak{r}_2 = \Theta(\varrho, \varsigma, \alpha)$$
$$\leq \Theta(\varrho, \nu, \frac{\alpha}{2}) \diamond \Theta(\nu, \varsigma, \frac{\alpha}{2}) \leq (1 - \mathfrak{r}_7) \diamond (1 - \mathfrak{r}_7) \leq (1 - \mathfrak{r}_5) \diamond (1 - \mathfrak{r}_5) \leq (1 - \mathfrak{r}_0) < \mathfrak{r}_2 \text{ and}$$
$$\mathfrak{r}_3 = \Upsilon(\varrho, \varsigma, \alpha)$$
$$\leq \Upsilon(\varrho, \nu, \frac{\alpha}{2}) \diamond \Upsilon(\nu, \varsigma, \frac{\alpha}{2}) \leq (1 - \mathfrak{r}_7) \diamond (1 - \mathfrak{r}_7) \leq (1 - \mathfrak{r}_6) \diamond (1 - \mathfrak{r}_6) \leq (1 - \mathfrak{r}_0) < \mathfrak{r}_3,$$

which contradicts itself. Hence, $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ is Hausdorff.

Theorem 3.14. *Consider a NCMS* $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$, $\varrho \in \daleth$ *and* (ϱ_n) *be an* $\daleth$ *sequence. Then* (ϱ_n) *converges to* ϱ *if, then, just* $\Xi(\varrho_n, \varrho, \alpha) \to 1, \Theta(\varrho_n, \varrho, \alpha) \to 0$ *and* $\Upsilon(\varrho_n, \varrho, \alpha) \to 0$ *as* $n \to \infty$, *for every* $\alpha \gg 0$.

Proof. Assume that $(\varrho_n) \to \varrho$. Then, for each $\alpha \gg 0$ and $\mathfrak{r} \in (0, 1)$, there is a natural number n_0 such that $\Xi(\varrho_n, \varrho, \alpha) > 1 - \mathfrak{r}, \Theta(\varrho_n, \varrho, \alpha) < \mathfrak{r}$ and $\Upsilon(\varrho_n, \varrho, \alpha) < \mathfrak{r}$, for all $n \gg n_0$. We have $1 - \Xi(\varrho_n, \varrho, \alpha) < \mathfrak{r}, \Theta(\varrho_n, \varrho, \alpha) < \mathfrak{r}$ and $\Upsilon(\varrho_n, \varrho, \alpha) < \mathfrak{r}$. Hence $\Xi(\varrho_n, \varrho, \alpha) \to 1, \Theta(\varrho_n, \varrho, \alpha) \to 0$ and $\Upsilon(\varrho_n, \varrho, \alpha) \to 0$ as $n \to \infty$.

However, suppose that $\Xi(\varrho_n, \varrho, \alpha) \to 1$ as $n \to \infty$. Then, there exists a natural integer n_0 such that for each $\alpha \gg 0$ and $\mathfrak{r} \in (0, 1)$, $1 - \Xi(\varrho_n, \varrho, \alpha) < \mathfrak{r}, \Theta(\varrho_n, \varrho, \alpha) < \mathfrak{r}$ and $\Upsilon(\varrho_n, \varrho, \alpha) < \mathfrak{r}$ for each $n \geq n_0$. Hence, $\Xi(\varrho_n, \varrho, \alpha) > 1 - \mathfrak{r}, \Theta(\varrho_n, \varrho, \alpha) < \mathfrak{r}$ and $\Upsilon(\varrho_n, \varrho, \alpha) < \mathfrak{r}$ for each $n \geq n_0$. Hence $\varrho_n \to \varrho$ as $n \to \infty$.

4. Main Results

Theorem 4.1. *Consider a complete NCMS* $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ *in which neutrosophic cone contractive sequences are Cauchy. Let* $\mathfrak{F} : \daleth \to \daleth$ *be a neutrosophic cone contractive mapping, the contractice constant is* ρ. *Then* $\mathfrak{F}$ *has a distinct fixed point.*

Proof. Consider $\varrho \in \daleth$ and let $\varrho_n = \mathfrak{F}^n(\varrho), n \in \mathbb{N}$. For $\alpha \gg 0$, we have

$$\frac{1}{\Xi(\mathfrak{F}(\varrho), \mathfrak{F}^2(\varrho), \alpha)} - 1 \leq \rho \left(\frac{1}{\Xi(\varrho, \varrho_1, \alpha)} - 1 \right),$$
$$\Theta(\mathfrak{F}(\varrho), \mathfrak{F}^2(\varrho), \alpha) \leq \rho \Theta(\varrho, \varrho_1, \alpha)$$
$$\Upsilon(\mathfrak{F}(\varrho), \mathfrak{F}^2(\varrho), \alpha) \leq \rho \Upsilon(\varrho, \varrho_1, \alpha)$$

and by induction

$$\frac{1}{\Xi(\varrho_{n+1}, \varrho_{n+2}, \alpha)} - 1 \leq \rho\left(\frac{1}{\Xi(\varrho_n, \varrho_{n+1}, \alpha)} - 1\right),$$

$$\Theta(\varrho_{n+1}, \varrho_{n+2}, \alpha) \leq \rho\Theta(\varrho_n, \varrho_{n+1}, \alpha)$$

$$\Upsilon(\varrho_{n+1}, \varrho_{n+2}, \alpha) \leq \rho\Upsilon(\varrho_n, \varrho_{n+1}, \alpha), \text{ for all } n \in \mathbb{N}$$

Then (ϱ_n) is a neutrosophic contractive Cauchy sequence which converges to ς where $\varsigma \in \daleth$. Theorem (3.14), gives us

$$\frac{1}{\Xi(\mathfrak{F}(\varsigma), \mathfrak{F}(\varrho_n), \alpha)} - 1 \leq \rho\left(\frac{1}{\Xi(\varsigma, \varrho_n, \alpha)} - 1\right) \to 1,$$

$$\Theta(\mathfrak{F}(\varsigma), \mathfrak{F}(\varrho_n), \alpha) \leq \rho\Theta(\varsigma, \varrho_n, \alpha) \to 0 \text{ and}$$

$$\Upsilon(\mathfrak{F}(\varsigma), \mathfrak{F}(\varrho_n), \alpha) \leq \rho\Upsilon(\varsigma, \varrho_n, \alpha) \to 0 \text{ as } n \to \infty.$$

Then for every $\alpha \gg 0$,

$\lim_{n\to\infty} \Xi(\mathfrak{F}(\varsigma), \mathfrak{F}(\varrho_n), \alpha) = 1$, $\lim_{n\to\infty} \Theta(\mathfrak{F}(\varsigma), \mathfrak{F}(\varrho_n), \alpha) = 0$ and $\lim_{n\to\infty} \Upsilon(\mathfrak{F}(\varsigma), \mathfrak{F}(\varrho_n), \alpha) = 0$ and hence $\lim_{n\to\infty} \mathfrak{F}(\varrho_n) = \mathfrak{F}(\varsigma)$.

Now, we prove uniqueness. Assume $\mathfrak{F}(\nu) = \nu$ for some $\nu \in \mathcal{V}$. For $\alpha \gg 0$, we have

$$\frac{1}{\Xi(\varsigma, \nu, \alpha)} - 1 = \frac{1}{\Xi(\mathfrak{F}(\varsigma), \mathfrak{F}(\nu), \alpha)} - 1 \leq \rho\left(\frac{1}{\Xi(\varsigma, \nu, \alpha)} - 1\right)$$

$$= \rho\left(\frac{1}{\Xi(\mathfrak{F}(\varsigma), \mathfrak{F}(\nu), \alpha)} - 1\right) \leq \rho^2\left(\frac{1}{\Xi(\varsigma, \nu, \alpha)} - 1\right)$$

$$\leq \cdots \leq \rho^n\left(\frac{1}{\Xi(\varsigma, \nu, \alpha)} - 1\right) \to 1 \text{ as } n \to \infty,$$

$$\Theta(\varsigma, \nu, \alpha) = \Theta(\mathfrak{F}(\varsigma), \mathfrak{F}(\nu), \alpha) \leq \rho\Theta(\varsigma, \nu, \alpha)$$

$$= \rho\Theta(\mathfrak{F}(\varsigma), \mathfrak{F}(\nu), \alpha) \leq \rho^2\Theta(\varsigma, \nu, \alpha)$$

$$\leq \cdots \leq \rho^n\Theta(\varsigma, \nu, \alpha) \to 0 \text{ as } n \to \infty,$$

$$\Upsilon(\varsigma, \nu, \alpha) = \Upsilon(\mathfrak{F}(\varsigma), \mathfrak{F}(\nu), \alpha) \leq \rho\Upsilon(\varsigma, \nu, \alpha)$$

$$= \rho\Upsilon(\mathfrak{F}(\varsigma), \mathfrak{F}(\nu), \alpha) \leq \rho^2\Upsilon(\varsigma, \nu, \alpha)$$

$$\leq \cdots \leq \rho^n\Upsilon(\varsigma, \nu, \alpha) \to 0 \text{ as } n \to \infty,$$

Hence $\Xi(\varsigma, \nu, \alpha) = 1, \Theta(\varsigma, \nu, \alpha) = 0$ and $\Upsilon(\varsigma, \nu, \alpha) = 0$ and $\varsigma = \nu$.

Theorem 4.2. *Consider a complete NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$, and let $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ be self-mappings of $\daleth$. Let $\{\mathcal{P}, \mathcal{Q}\}$ and $\{\mathcal{R}, \mathcal{S}\}$ be Occasionally Weakly Compatible (OWC) pairings.*

Assuming there is a $\rho \in (0,1)$ such that

$$\Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \geq \min \left\{ \begin{array}{ll} \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) & \end{array} \right\},$$

$$\Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \max \left\{ \begin{array}{ll} \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) & \end{array} \right\},$$

$$\Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \max \left\{ \begin{array}{ll} \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) & \end{array} \right\} \qquad (4.2.1)$$

for each $\varrho, \varsigma \in \daleth$ and for each $\alpha \gg 0$, afterward there is a special point $\omega \in \daleth$ like that $\mathcal{P}(\omega) = \mathcal{Q}(\omega) = \omega$ and a unique point $\nu \in \daleth$ such that $\mathcal{R}(\nu) = \mathcal{S}(\nu) = \nu$. Moreover $\nu = \omega$, hence $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ have a singular shared fixed point.

Proof. Consider $\{\mathcal{P}, \mathcal{Q}\}$ and $\{\mathcal{R}, \mathcal{S}\}$ which are OWC pairings, consequently points $\varrho, \varsigma \in \daleth$ is such that $\mathcal{P}(\varrho) = \mathcal{Q}(\varrho)$ and $\mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$. We claim that $\mathcal{P}(\varrho) = \mathcal{R}(\varsigma)$.

By inequality (4.2.1),

$$\Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \geq \min \left\{ \begin{array}{ll} \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) & \end{array} \right\}$$

$$= \min \left\{ \begin{array}{ll} \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) & \end{array} \right\}$$

$$= \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha),$$

$$\Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \max \left\{ \begin{array}{ll} \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) & \end{array} \right\}$$

$$= \max \left\{ \begin{array}{ll} \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) & \end{array} \right\}$$

$$= \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$\Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \max \left\{ \begin{array}{ll} \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) & \end{array} \right\}$$

$$= \max \left\{ \begin{array}{ll} \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) \end{array} \right\}$$

$$= \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

By Lemma (3.11), $\mathcal{P}(\varrho) = \mathcal{R}(\varsigma)$, i.e., $\mathcal{P}(\varrho) = \mathcal{Q}(\varrho) = \mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$.

Supposing there is a point ν that is different $\mathcal{P}(\nu) = \mathcal{Q}(\nu)$ then by (4.2.1), we have $\mathcal{P}(\nu) = \mathcal{Q}(\nu) = \mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$, so $\mathcal{P}(\varrho) = \mathcal{P}(\nu)$ and $\omega = \mathcal{P}(\varrho) = \mathcal{Q}(\varrho)$ is the special place where $\mathcal{P}$ and $\mathcal{Q}$ coincide.

By Lemma (3.11), the only fixed point between $\mathcal{P}$ and $\mathcal{Q}$ is ω. Likewise, there is a special point $\nu \in \daleth$ like that $\nu = \mathcal{R}(\nu) = \mathcal{S}(\nu)$. Assume that $\omega \neq \nu$, we have

$$\Xi(\omega, \nu, \rho(\alpha)) = \Xi(\mathcal{P}(\omega), \mathcal{R}(\nu), \rho(\alpha))$$

$$\geq \min \left\{ \begin{array}{ll} \Xi(\mathcal{Q}(\omega), \mathcal{S}(\nu), \alpha), & \Xi(\mathcal{Q}(\omega), \mathcal{P}(\nu), \alpha), \\ \Xi(\mathcal{R}(\nu), \mathcal{S}(\nu), \alpha), & \Xi(\mathcal{P}(\omega), \mathcal{S}(\nu), \alpha), \\ \Xi(\mathcal{R}(\nu), \mathcal{Q}(\omega), \alpha) \end{array} \right\}$$

$$= \min \left\{ \Xi(\omega, \nu, \alpha), \Xi(\omega, \nu, \alpha), \Xi(\nu, \nu, \alpha), \Xi(\omega, \nu, \alpha), \Xi(\nu, \omega, \alpha) \right\}$$

$$= \Xi(\omega, \nu, \alpha),$$

$$\Theta(\omega, \nu, \rho(\alpha)) = \Theta(\mathcal{P}(\omega), \mathcal{R}(\nu), \rho(\alpha))$$

$$\leq \max \left\{ \begin{array}{ll} \Theta(\mathcal{Q}(\omega), \mathcal{S}(\nu), \alpha), & \Theta(\mathcal{Q}(\omega), \mathcal{P}(\nu), \alpha), \\ \Theta(\mathcal{R}(\nu), \mathcal{S}(\nu), \alpha), & \Theta(\mathcal{P}(\omega), \mathcal{S}(\nu), \alpha), \\ \Theta(\mathcal{R}(\nu), \mathcal{Q}(\omega), \alpha) \end{array} \right\}$$

$$= \max \left\{ \Theta(\omega, \nu, \alpha), \Theta(\omega, \nu, \alpha), \Theta(\nu, \nu, \alpha), \Theta(\omega, \nu, \alpha), \Theta(\nu, \omega, \alpha) \right\}$$

$$= \Theta(\omega, \nu, \alpha),$$

$$\Upsilon(\omega, \nu, \rho(\alpha)) = \Upsilon(\mathcal{P}(\omega), \mathcal{R}(\nu), \rho(\alpha))$$

$$\leq \max \left\{ \begin{array}{ll} \Upsilon(\mathcal{Q}(\omega), \mathcal{S}(\nu), \alpha), & \Upsilon(\mathcal{Q}(\omega), \mathcal{P}(\nu), \alpha), \\ \Upsilon(\mathcal{R}(\nu), \mathcal{S}(\nu), \alpha), & \Upsilon(\mathcal{P}(\omega), \mathcal{S}(\nu), \alpha), \\ \Upsilon(\mathcal{R}(\nu), \mathcal{Q}(\omega), \alpha) \end{array} \right\}$$

$$= \max \left\{ \Upsilon(\omega, \nu, \alpha), \Upsilon(\omega, \nu, \alpha), \Upsilon(\nu, \nu, \alpha), \Upsilon(\omega, \nu, \alpha), \Upsilon(\nu, \omega, \alpha) \right\}$$

$$= \Upsilon(\omega, \nu, \alpha).$$

Hence, we have $\nu = \omega$ by Lemma (3.11), a common fixed point of $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ is ν. (4.2.1) states that the fixed point's uniqueness is true.

Theorem 4.3. *Consider a complete NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ and let $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ be self-mappings of $\daleth$. Let $\{\mathcal{P}, \mathcal{Q}\}$ and $\{\mathcal{R}, \mathcal{S}\}$ be OWC pairings. If $\rho \in (0, 1)$ exists in a way that*

$$\Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \geq \chi \left[\min \left\{ \begin{array}{ll} \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\} \right],$$

$$\Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \psi \left[\max \left\{ \begin{array}{ll} \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\} \right],$$

$$\Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \phi \left[\max \left\{ \begin{array}{ll} \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\} \right],$$

for each $\varrho, \varsigma \in \daleth$ and $\chi, \psi, \phi : [0, 1] \to [0, 1]$, such that $\chi(\alpha) > \alpha, \psi(\alpha) < \alpha, \phi(\alpha) < \alpha$ for all $0 \ll \alpha < 1$, therefore $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ have a special shared fixed point.

Proof. Theorem (4.2) leads to the theorem's proof.

Theorem 4.4. *Consider a complete NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ and let $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ be self-mappings of $\daleth$. Let $\{\mathcal{P}, \mathcal{Q}\}$ and $\{\mathcal{R}, \mathcal{S}\}$ be OWC pairings. If there is a $\rho \in (0, 1)$ such that*

$$\Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \geq \chi \left\{ \begin{array}{ll} \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\},$$

$$\Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \psi \left\{ \begin{array}{ll} \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\},$$

$$\Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \phi \left\{ \begin{array}{ll} \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\} \quad (4.4.1)$$

for each $\varrho, \varsigma \in \daleth$ and $\chi, \psi, \phi : [0, 1]^5 \to [0, 1]$, such that $\chi(\alpha, 1, 1, \alpha, \alpha) > \alpha, \psi(\alpha, 0, 0, \alpha, \alpha) < \alpha, \phi(\alpha, 0, 0, \alpha, \alpha) < \alpha$ for all $0 \ll \alpha < 1$, then $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ have a special shared fixed point.

Proof. Consider $\{\mathcal{P}, \mathcal{Q}\}$ and $\{\mathcal{R}, \mathcal{S}\}$ which are OWC pairings, there are points $\varrho, \varsigma \in \daleth$ such that $\mathcal{P}(\varrho) = \mathcal{Q}(\varrho)$ and $\mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$.

We show that $\mathcal{P}(\varrho) = \mathcal{R}(\varsigma)$. By inequality (4.4.1), we have

$$\Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \geq \chi \left\{ \begin{array}{ll} \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\}$$

$$= \chi \left\{ \begin{array}{ll} \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha), & \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \\ \Xi(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) \end{array} \right\}$$

$$= \chi \left\{ \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), 1, 1, \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \Xi(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) \right\}$$

$$\geq \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha),$$

$$\Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \psi \left\{ \begin{array}{ll} \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\}$$

$$= \psi \left\{ \begin{array}{ll} \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha), & \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \\ \Theta(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) \end{array} \right\}$$

$$= \psi \left\{ \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), 0, 0, \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \Theta(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) \right\}$$

$$\leq \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha),$$

$$\Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)) \leq \phi \left\{ \begin{array}{ll} \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), \alpha) \end{array} \right\}$$

$$= \phi \left\{ \begin{array}{ll} \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha), & \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \\ \Upsilon(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) \end{array} \right\}$$

$$= \phi \left\{ \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), 0, 0, \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha), \Upsilon(\mathcal{R}(\varsigma), \mathcal{P}(\varrho), \alpha) \right\}$$

$$\leq \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha),$$

which is a contradiction, hence $\mathcal{P}(\varrho) = \mathcal{R}(\varsigma)$. That is $\mathcal{P}(\varrho) = \mathcal{Q}(\varrho) = \mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$.

Assume that there is a point ν such that $\mathcal{P}(\nu) = \mathcal{Q}(\nu)$, then by (4.4.1) $\mathcal{P}(\nu) = \mathcal{Q}(\nu) = \mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$, so $\mathcal{P}(\varrho) = \mathcal{P}(\nu)$ and $\omega = \mathcal{P}(\varrho) = \mathcal{S}(\varrho)$ is the special place where $\mathcal{P}$ and $\mathcal{Q}$ coincide. From Lemma (2.6), ω is the sole fixed point that connects $\mathcal{P}$ and $\mathcal{Q}$. Likewise, there is a speical point $\nu \in \daleth$ like that $\nu = \mathcal{R}(\nu) = \mathcal{S}(\nu)$. Thus a common fixed point between $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ is ν. (4.4.1) states that the fixed point's uniqueness holds.

Theorem 4.5. *Consider a complete NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ and let $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ be self - mappings of $\daleth$. Consider $\{\mathcal{P}, \mathcal{Q}\}$ and $\{\mathcal{R}, \mathcal{S}\}$ which are OWC pairings. If point $\rho \in (0, 1)$*

exists, then for every $\varrho, \varsigma \in \daleth$ and $\alpha \gg 0$ satisfying

$$\Xi\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \geq \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$\Theta\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \leq \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$\Upsilon\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \leq \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$(4.5.1)$$

then $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ have a special shared fixed point.

Proof. Consider $\{\mathcal{P}, \mathcal{Q}\}$ and $\{\mathcal{R}, \mathcal{S}\}$ which are OWC pairings. There are points $\varrho, \varsigma \in \daleth$ such that $\mathcal{P}(\varrho) = \mathcal{Q}(\varrho)$ and $\mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$. We claim that $\mathcal{P}(\varrho) = \mathcal{R}(\varsigma)$.

By inequality (4.5.1), we have

$$\Xi\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \geq \Xi(\mathcal{Q}(\varrho), \mathcal{R}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$= \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$\geq \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha) * 1 * 1 * \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$= \Xi(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$\Theta\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \leq \Theta(\mathcal{Q}(\varrho), \mathcal{R}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$= \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$\leq \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha) \diamond 0 \diamond 0 \diamond \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$\leq \Theta(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$\Upsilon\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \leq \Upsilon(\mathcal{Q}(\varrho), \mathcal{R}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$= \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{P}(\varrho), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{R}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$\leq \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha) \diamond 0 \diamond 0 \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

$$\leq \Upsilon(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \alpha)$$

By Lemma (3.11), we have $\mathcal{P}(\varrho) = \mathcal{R}(\varsigma)$ i.e., $\mathcal{P}(\varrho) = \mathcal{Q}(\varrho) = \mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$. Assume that there is a another point ν such that $\mathcal{P}(\nu) = \mathcal{R}(\nu)$ then by (4.5.1), we have $\mathcal{P}(\nu) = \mathcal{Q}(\nu) = \mathcal{R}(\varsigma) = \mathcal{S}(\varsigma)$, so $\mathcal{P}(\varrho) = \mathcal{P}(\nu)$ and $\omega = \mathcal{P}(\varrho) = \mathcal{Q}(\varrho)$ is the one and only place where $\mathcal{P}$ and $\mathcal{Q}$ coincide. Similarly, there is a special aspect $\omega \in \daleth$ like that $\omega = \mathcal{R}(\omega) = \mathcal{S}(\omega)$.
The common fixed point between $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ is ω.

Theorem 4.6. *Consider a complete NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ and let $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$ be self-mappings of $\daleth$. Let $\{\mathcal{P}, \mathcal{Q}\}$ and $\{\mathcal{R}, \mathcal{S}\}$ be OWC pairings. If there is a $\rho \in (0,1)$ for each*

$\varrho, \varsigma \in \daleth$ and $\alpha \gg 0$ satisfying

$$\Xi\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \geq \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), 2\alpha)*$$
$$\Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$\Theta\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \leq \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), 2\alpha)\diamond$$
$$\Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$\Upsilon\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \leq \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), 2\alpha)\diamond$$
$$\Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

then there is a singular common fixed point between $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$.

Proof. We have

$$\Xi\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \geq \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), 2\alpha)*$$
$$\Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$
$$\geq \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha)*$$
$$\Xi(\mathcal{S}(\varsigma), \mathcal{R}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$
$$\geq \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) * \Xi(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$\Theta\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \leq \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), 2\alpha)\diamond$$
$$\Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$
$$\leq \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha)\diamond$$
$$\Theta(\mathcal{S}(\varsigma), \mathcal{R}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$
$$\leq \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Theta(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

$$\Upsilon\big(\mathcal{P}(\varrho), \mathcal{R}(\varsigma), \rho(\alpha)\big) \leq \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{Q}(\varrho), 2\alpha)\diamond$$
$$\Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$
$$\leq \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha)\diamond$$
$$\Upsilon(\mathcal{S}(\varsigma), \mathcal{R}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$
$$\leq \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Upsilon(\mathcal{R}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

and hence from Theorem (4.5) there is a shared fixed point for $\mathcal{P}, \mathcal{R}, \mathcal{Q}$ and $\mathcal{S}$.

Corollary 4.7. *Consider a complete NCMS* $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$. *Then continuous self-mappings* $\mathcal{Q}$ *and* $\mathcal{S}$ *of* $\daleth$ *possess a shared fixed point in* $\daleth$ *if and only if a self - mapping* $\mathcal{P}$ *of* $\daleth$ *exists so that that the aforementioned requirements are met.*

(1) $\mathcal{P}\daleth \subset \mathcal{S}\daleth \cap \mathcal{Q}\daleth$

(2) the pairs $\{\mathcal{P}, \mathcal{Q}\}$ *and* $\{\mathcal{P}, \mathcal{S}\}$ *are weakly compatible,*

(3) a point has been made $\rho \in (0,1)$ such that for every $\varrho, \varsigma \in \daleth$ and $\alpha \gg 0$,

$$\Xi\big(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \rho(\alpha)\big) \geq \Xi(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) * \Xi(\mathcal{P}(\varsigma), \mathcal{S}(\varsigma), \alpha) * \Xi(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha),$$

$$\Theta\big(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \rho(\alpha)\big) \leq \Theta(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Theta(\mathcal{P}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Theta(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha),$$

$$\Upsilon\big(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \rho(\alpha)\big) \leq \Upsilon(\mathcal{Q}(\varrho), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{Q}(\varrho), \alpha) \diamond \Upsilon(\mathcal{P}(\varsigma), \mathcal{S}(\varsigma), \alpha) \diamond \Upsilon(\mathcal{P}(\varrho), \mathcal{S}(\varsigma), \alpha)$$

Fixed point in common between $\mathcal{P}, \mathcal{Q}$ and $\mathcal{S}$ is distinct.

Proof. Since compatibility also implies OWC , Theorem (4.6) leads to the conclusion.

Theorem 4.8. *Consider a complete NCMS $(\daleth, \Xi, \Theta, \Upsilon, *, \diamond)$ and let $\mathcal{P}$ and $\mathcal{Q}$ be self -mappings of $\daleth$. Let the $\mathcal{P}$ and $\mathcal{Q}$ are OWC . If there is a point $\rho \in (0,1)$ for every $\varrho, \varsigma \in \daleth$ and $\alpha \gg 0$*

$$\Xi\big(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \rho(\alpha)\big) \geq \alpha\Xi(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha) + \beta \min\Big\{\Xi(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha), \Xi(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \Xi(\mathcal{Q}(\varsigma), \mathcal{P}(\varsigma), \alpha)\Big\},$$

$$\Theta\big(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \rho(\alpha)\big) \leq \alpha\Theta(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha) + \beta \max\Big\{\Theta(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha), \Theta(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \Theta(\mathcal{Q}(\varsigma), \mathcal{P}(\varsigma), \alpha)\Big\},$$

$$\Upsilon\big(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \rho(\alpha)\big) \leq \alpha\Upsilon(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha) + \beta \max\Big\{\Upsilon(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha), \Upsilon(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \Upsilon(\mathcal{Q}(\varsigma), \mathcal{P}(\varsigma), \alpha)\Big\}$$

$$(4.8.1)$$

for all $\varrho, \varsigma \in \daleth$, where $\alpha, \beta > 0, \alpha + \beta > 1$. $\mathcal{P}$ and $\mathcal{Q}$ share a distinct common fixed point.

Proof. Consider $\{\mathcal{P}, \mathcal{Q}\}$ which are OWC pair, so that there is a point $\varrho \in \daleth$ such that $\mathcal{P}(\varrho) = \mathcal{Q}(\varrho)$. Consider the possibiity of another point $\varsigma \in \daleth$ for which $\mathcal{P}(\varsigma) = \mathcal{Q}(\varsigma)$. We claim that $\mathcal{Q}(\varrho) = \mathcal{Q}(\varsigma)$. By inequality (4.8.1), we have

$$\Xi\big(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \rho(\alpha)\big) \geq \alpha\Xi(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha) + \beta \min\Big\{\Xi(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha), \Xi(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \Xi(\mathcal{Q}(\varsigma), \mathcal{P}(\varsigma), \alpha)\Big\}$$

$$= \alpha\Xi(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha) + \beta \min\Big\{\Xi(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha), \Xi(\mathcal{Q}(\varrho), \mathcal{Q}(\varrho), \alpha), \Xi(\mathcal{Q}(\varsigma), \mathcal{Q}(\varsigma), \alpha)\Big\}$$

$$= (\alpha + \beta)\Xi(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha),$$

$$\Theta\big(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \rho(\alpha)\big) \leq \alpha\Theta(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha) + \beta \max\Big\{\Theta(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha), \Theta(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \Theta(\mathcal{Q}(\varsigma), \mathcal{P}(\varsigma), \alpha)\Big\}$$

$$= \alpha\Theta(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha) + \beta \max\Big\{\Theta(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha), \Theta(\mathcal{Q}(\varrho), \mathcal{Q}(\varrho), \alpha), \Theta(\mathcal{Q}(\varsigma), \mathcal{Q}(\varsigma), \alpha)\Big\}$$

$$= (\alpha + \beta)\Theta(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha),$$

$$\Upsilon\big(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \rho(\alpha)\big) \leq \alpha\Upsilon(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha) + \beta \max\Big\{\Upsilon(\mathcal{P}(\varrho), \mathcal{P}(\varsigma), \alpha), \Upsilon(\mathcal{Q}(\varrho), \mathcal{P}(\varrho), \alpha), \Upsilon(\mathcal{Q}(\varsigma), \mathcal{P}(\varsigma), \alpha)\Big\}$$

$$= \alpha\Upsilon(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha) + \beta \max\Big\{\Upsilon(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha), \Upsilon(\mathcal{Q}(\varrho), \mathcal{Q}(\varrho), \alpha), \Upsilon(\mathcal{Q}(\varsigma), \mathcal{Q}(\varsigma), \alpha)\Big\}$$

$$= (\alpha + \beta)\Upsilon(\mathcal{Q}(\varrho), \mathcal{Q}(\varsigma), \alpha)$$

a contradiction, since $(\alpha + \beta) > 1$. Therefore $\mathcal{Q}(\varrho) = \mathcal{Q}(\varsigma)$. Therefore $\mathcal{P}(\varrho) = \mathcal{P}(\varsigma)$ and $\mathcal{P}(\varrho)$ is unique. $\mathcal{P}$ and $\mathcal{Q}$ have a distinct fixed point from lemma (2.6).

Example 4.9. Let $\Sigma = [0,1]$ and let $\Xi(\varrho, \varsigma, \alpha) = \frac{\alpha}{\alpha + |\varrho - \varsigma|}$, $\Theta(\varrho, \varsigma, \alpha) = \frac{|\varrho - \varsigma|}{\alpha + |\varrho - \varsigma|}$ and $\Upsilon(\varrho, \varsigma, \alpha) = \frac{|\varrho - \varsigma|}{\alpha}$ are neutrosophic metric on Σ. Define self mappings $\mathcal{P}$ and $\mathcal{Q}$ on Σ as

follows $\mathcal{P}(\varrho) = \frac{1-\varrho}{3}$ and $\mathcal{Q}(\varrho) = \frac{\sqrt{5-4(1-2\varrho)^2}-1}{4}$. Clearly $\mathcal{P}$ and $\mathcal{Q}$ are OWC maps. Also, $\mathcal{P}$ and $\mathcal{Q}$ are satisfy all the conditions of Theorem 4.8. The self maps $\mathcal{P}$ and $\mathcal{Q}$ have coincidence points $\varrho = 1, \frac{1}{4}$ and the common fixed point $\varrho = \frac{1}{4}$.

5. Conclusion

Using the idea of contractive conditions and OWC , we have demonstrated that there is a common fixed point for four self mappings, three self mappings and two self mappings in a complete NCMS.

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Some Fixed Point Results in Neutrosophic b-Metric Spaces

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Abstract

Several fixed point theorems in the Neutrosophic b-Metric Spaces are presented in this study. We provide a necessary condition for a sequence to be Cacuhy in the Neutrosophic b-Metric Space, which is a significant result. Additionally, we present a large number of fixed point theorems in the Neutrosophic b-Metric Spaces under the well-known contraction conditions.

Keywords: Fixed point; Neutrosophic b-Metric Space.

2020 AMS subject classifications: 54H25; 05C40. [1]

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1 Introduction

Due to the wide range of applications it has in science, economics and game theory, fixed point theory has grown in importance in mathematics. Since the publication of Banach's fundamental finding in 1922, metric fixed point theory has been the subject of active scientific research. It is commonly known that the fixed point theory's main conclusion-the Banach contraction principle-has been applied and developed in a wide range of ways. Bakhtin presented the idea of b-metric space in 1989 as a generalization of metric space and demonstrated a b-metric space equivalent to the Banach contraction principle. Czerwik[5] expanded the results of the b-metric space in 1993. Since then, other articles, including [4], have addressed the generalization of the well-known Banach fixed point theorem in the b-metric space. A countable of the t-norm and contraction condition were used in 2021 by Jeyaraman and Poovaragavan[8] to show that the sequence in generalized fuzzy b-metric spaces is a Cauchy sequence. Since the paper's release, Zadeh's [13] Fuzzy Sets(FSs) theory has a significant impact on all scientific disciplines. Although this idea is crucial for real-life circumstances, there weren't enough timely solutions for some issues. Such issues have recently become the subject of new quests. For these situations, Atanassov[1] pioneered Intuituionistic Fuzzy Sets(IFS). The term "Neutrosophic Set" (NS) refers to a novel interpretation of Smarandache's definition of the term "Classical Set". Interesting and helpful for problem-solving is Atanassov's [1] IFS theory. The fuzzy set described by Zadeh[13] is really extended by the IFS. The IFS theory has been used in a variety of fields recently, including logic programming [2], decision-making issues, medical diagnosis[3] etc. The idea of Contractive mappings in Neutrosophic b-metric spaces in fixed point theorems was used in 2022 by Shakila and Jeyaraman[9].

The main idea of this paper is to describe a contraction for Neutrosophic b-Metric Space and show a very helpful lemma that guarantees that a sequence $\{x_n\}$ is a Cauchy sequence using the idea of a countable extension of the t-norm. The proofs of numerous well-known fixed-point theorems are made simpler using this lemma. Some of them are discussed in the paper's main section.

2 Preliminaries

Proposition 2.1. *Let* $(\varsigma_n)_{n\in\mathbb{N}}$ *be a sequence of numbers from* $[0,1]$ *such that* $\lim_{n\to\infty} \varsigma_n = 1$, *and let* $*$ *be a t-norm of* Ω-*type.*
Then $\lim_{n\to\infty} *_{i=n}^{\infty} \varsigma_i = \lim_{n\to\infty} *_{i=1}^{\infty} \varsigma_{n+i} = 1.$

Definition 2.1. *[9] A 7-tuple* $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$ *is said to be a Neutrosophic b-metric space (NbMS), if* Λ *is an arbitrary set,* $b \geq 1$ *is a given real number,* $*$ *is*

a continuous triangular norm, $\diamond$ is a continuous triangular conorm, Ξ, Ω and Υ are nonempty sets on $\Lambda^2 \times [0, \infty)$ meeting the aforementioned prerequisites: For all $\varsigma, \vartheta, \delta \in \Lambda$ and $\varpi, \mu > 0$:

(a) $\Xi(\varsigma, \vartheta, \varpi) + \Omega(\varsigma, \vartheta, \varpi) + \Upsilon(\varsigma, \vartheta, \varpi) \leq 3$;

(b) $0 \leq \Xi(\varsigma, \vartheta, \varpi) \leq 1; 0 \leq \Omega(\varsigma, \vartheta, \varpi) \leq 1; 0 \leq \Upsilon(\varsigma, \vartheta, \varpi) \leq 1$;

(c) $\Xi(\varsigma, \vartheta, 0) > 0$;

(d) $\Xi(\varsigma, \vartheta, \varpi) = 1$ iff $\varsigma = \vartheta$;

(e) $\Xi(\varsigma, \vartheta, \varpi) = \Xi(\vartheta, \varsigma, \varpi)$;

(f) $\Xi(\varsigma, \delta, b(\varpi + \mu)) \geq * \left(\Xi \left(\varsigma, \vartheta, \frac{\varpi}{b} \right), \Xi \left(\vartheta, \delta, \frac{\mu}{b} \right) \right)$;

(g) $\Xi(\varsigma, \vartheta, .) : (0, \infty) \rightarrow [0, 1]$ is continuous;

(h) $\Omega(\varsigma, \vartheta, 0) < 1$;

(i) $\Omega(\varsigma, \vartheta, \varpi) = 0$ iff $\varsigma = \vartheta$;

(j) $\Omega(\varsigma, \vartheta, \varpi) = \Omega(\vartheta, \varsigma, \varpi)$;

(k) $\Omega(\varsigma, \delta, b(\varpi + \mu)) \leq \diamond \left(\Omega \left(\varsigma, \vartheta, \frac{\varpi}{b} \right), \Omega \left(\vartheta, \delta, \frac{\mu}{b} \right) \right)$;

(l) $\Omega(\varsigma, \vartheta, .) : (0, \infty) \rightarrow [0, 1]$ is continuous;

(m) $\Upsilon(\varsigma, \vartheta, 0) < 1$;

(n) $\Upsilon(\varsigma, \vartheta, \varpi) = 0$ iff $\varsigma = \vartheta$;

(o) $\Upsilon(\varsigma, \vartheta, \varpi) = \Upsilon(\vartheta, \varsigma, \varpi)$;

(p) $\Upsilon(\varsigma, \delta, b(\varpi + \mu)) \leq \diamond \left(\Upsilon \left(\varsigma, \vartheta, \frac{\varpi}{b} \right), \Upsilon \left(\vartheta, \delta, \frac{\mu}{b} \right) \right)$;

(q) $\Upsilon(\varsigma, \vartheta, .) : (0, \infty) \rightarrow [0, 1]$ is continuous;

Here, $\Xi(\varsigma, \vartheta, \varpi), \Omega(\varsigma, \vartheta, \varpi)$ and $\Upsilon(\varsigma, \vartheta, \varpi)$ denote the degree of nearness, the degree of non-nearness and the degree of neutralness between ς and ϑ with respect to ϖ respectively.

Since a neutrosophic b-metric is a neutrosophic metric when $b = 1$, the class of NbMS is essentially bigger than that of neutrosophic metric spaces.

The following illustration demonstrates that a neutrosophic b-metric space on Λ does not necessarily have to be a neutrosophic metric space on Λ.

Example 2.1. *[6] Let $\Xi(\varsigma, \vartheta, \varpi) = e^{\frac{-|\varsigma - \vartheta|^\theta}{\varpi}}, \Omega(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{-|\varsigma - \vartheta|^\theta}{\varpi}},$*
$\Upsilon(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{|\varsigma - \vartheta|^\theta}{\varpi}}$ where $\theta > 1$. Then Ξ, Ω, Υ is a neutrosophic b-metric with $b = 2^{\theta - 1}$. For $\theta = 2$, it is clear from the prior example that $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$ is not a neutrosophic metric space.

Example 2.2. *[6] Let $\Xi(\varsigma, \vartheta, \varpi) = e^{\frac{-d(\varsigma, \vartheta)}{\varpi}}$ or $\Xi(\varsigma, \vartheta, \varpi) = \frac{\varpi}{\varpi + d(\varsigma, \vartheta)},$*
$\Omega(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{-d(\varsigma, \vartheta)}{\varpi}}$ or $\Omega(\varsigma, \vartheta, \varpi) = 1 - \frac{\varpi}{\varpi + d(\varsigma, \vartheta)}$ and $\Upsilon(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{d(\varsigma, \vartheta)}{\varpi}}$
or $\Upsilon(\varsigma, \vartheta, \varpi) = 1 - \frac{\varpi + d(\varsigma, \vartheta)}{\varpi}$ where d is a b-metric on Λ. Then it is easy to show that Ξ, Ω and Υ is a neutrosophic b-metric.

Definition 2.2. *[6] A function $g : \mathbb{R} \rightarrow \mathbb{R}$ is called b-nondecreasing if $\varsigma > b\vartheta$ implies $g(\varsigma) \geq g(\vartheta)$ for all $\varsigma, \vartheta \in \mathbb{R}$.*

Lemma 2.1. *[9] Let $\Xi(\varsigma, \vartheta, .), \Omega(\varsigma, \vartheta, .)$ and $\Upsilon(\varsigma, \vartheta, .)$ be a NbMS. Then $\Xi(\varsigma, \vartheta, \varpi)$ is b-nondecreasing with respect to $\varpi, \Omega(\varsigma, \vartheta, \varpi)$ and $\Upsilon(\varsigma, \vartheta, \varpi)$ are b-non-increasing with respect to ϖ, for all $\varsigma, \vartheta \in \Lambda$.*

Definition 2.3. *[9] Let $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamondsuit, b)$ be a neutrosophic b-metric space. For $\varpi > 0$, the open ball $\Psi(\varsigma, r, \varpi)$ with centre $\varsigma \in \Lambda$ and radius $0 < r < 1$ is defined as*
$\Psi(\varsigma, r, \varpi) = \{\vartheta \in \Lambda : \Xi(\varsigma, \vartheta, \varpi) > 1 - r, \Omega(\varsigma, \vartheta, \varpi) < r \text{ and } \Upsilon(\varsigma, \vartheta, \varpi) < r\}.$
A sequence $\{\varsigma_n\}$:
(a) Converges to ς if $\Xi(\varsigma_n, \vartheta, \varpi) \to 1, \Omega(\varsigma_n, \vartheta, \varpi) \to 0$ and $\Upsilon(\varsigma_n, \vartheta, \varpi) \to 0$ as $n \to \infty$, for each $\varpi > 0$. In this case we write $\lim_{n\to\infty} \varsigma_n = \varsigma$;
(b) is called a Cauchy sequence if for all $0 < \epsilon < 1$ and $\varpi > 0$, there exists $n_0 \in \mathbb{N}$ such that $\Xi(\varsigma_n, \varsigma_m, \varpi) > 1 - \epsilon, \Omega(\varsigma_n, \varsigma_m, \varpi) < \epsilon$ and $\Upsilon(\varsigma_n, \varsigma_m, \varpi) < \epsilon$ for all $n, m \geq n_0$.

Definition 2.4. *[9] If every Cauchy sequence in NbMS is convergent, NbMS is complete.*

Lemma 2.2. *[9] In a NbMS $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamondsuit, b)$ we have:*
(i) If a sequence $\{\varsigma_n\}$ in Λ converges to ς, then ς is unique.
(ii) If a sequence $\{\varsigma_n\}$ in Λ converges to ς, then it is a Cauchy sequence.

Proposition 2.2. *Let $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamondsuit, b)$ be a NbMS and suppose that $\{\varsigma_n\}$ Converges to ς. Then we have*

$$\Xi\left(\varsigma, \vartheta, \frac{\varpi}{b}\right) \leq \lim_{n\to\infty}\sup \Xi(\varsigma_n, \vartheta, \varpi) \leq \Xi(\varsigma, \vartheta, b\varpi),$$

$$\Xi\left(\varsigma, \vartheta, \frac{\varpi}{b}\right) \leq \lim_{n\to\infty}\inf \Xi(\varsigma_n, \vartheta, \varpi) \leq \Xi(\varsigma, \vartheta, b\varpi),$$

$$\Omega\left(\varsigma, \vartheta, \frac{\varpi}{b}\right) \geq \lim_{n\to\infty}\inf \Omega(\varsigma_n, \vartheta, \varpi) \geq \Omega(\varsigma, \vartheta, b\varpi),$$

$$\Omega\left(\varsigma, \vartheta, \frac{\varpi}{b}\right) \geq \lim_{n\to\infty}\sup \Omega(\varsigma_n, \vartheta, \varpi) \geq \Omega(\varsigma, \vartheta, b\varpi) \text{ and}$$

$$\Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{b}\right) \geq \lim_{n\to\infty}\inf \Upsilon(\varsigma_n, \vartheta, \varpi) \geq \Upsilon(\varsigma, \vartheta, b\varpi),$$

$$\Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{b}\right) \geq \lim_{n\to\infty}\sup \Upsilon(\varsigma_n, \vartheta, \varpi) \geq \Upsilon(\varsigma, \vartheta, b\varpi)$$

Example 2.3. *Let $\Lambda = [0, \infty), \Xi(\varsigma, \vartheta, \varpi) = e^{\frac{-d(\varsigma,\vartheta)}{\varpi}}, \Omega(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{-d(\varsigma,\vartheta)}{\varpi}}$ and*
$\Upsilon(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{d(\varsigma,\vartheta)}{\varpi}} * = *_\theta, \diamondsuit = \diamondsuit_\theta$ *and* $d(\varsigma, \vartheta) = \begin{cases} 0, & \varsigma = \vartheta, \\ 2|\varsigma - \vartheta|, & \varsigma, \vartheta \in [0, 1) \\ \frac{1}{2}|\varsigma - \vartheta| & otherwise. \end{cases}$
Then $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamondsuit, b)$ is a NbMS with $b = 4$. The b-metric d in this example is

taken from [12]. Note that the Neutrosophic b-metric Ξ, Ω, Υ is not continuous. Let us observe that

$$\lim_{n\to\infty} \Xi\left(1, 1 - \frac{1}{n}, \varpi\right) = \lim_{n\to\infty} e^{-\frac{1}{2n\varpi}} = 1, \Xi(1, 1, \varpi) = 1,$$

$$\lim_{n\to\infty} \Omega\left(0, \frac{1}{n}, \varpi\right) = \lim_{n\to\infty} \left(1 - e^{-\frac{2}{n\varpi}}\right) = 0, \Omega(0, 0, \varpi) = 0 \ and$$

$$\lim_{n\to\infty} \Upsilon\left(0, \frac{1}{n-1}, \varpi\right) = \lim_{n\to\infty} \left(1 - e^{-\frac{1}{\varpi}\left(\frac{2}{n-1}\right)}\right) = 0, \Upsilon(0, 0, \varpi) = 0.$$

But,

$$\lim_{n\to\infty} \Xi\left(0, 1 - \frac{1}{n}, \varpi\right) = \lim_{n\to\infty} e^{\frac{-1}{\varpi}(2)\left(\frac{1}{n}-1\right)} = e^{-\frac{2}{\varpi}},$$

$$\Xi(0, 1, \varpi) = e^{-\frac{1}{2\varpi}},$$

$$\lim_{n\to\infty} \Omega\left(1, \frac{1}{n}, \varpi\right) = \lim_{n\to\infty} \left(1 - e^{\frac{-1}{\varpi}(2)\left(1-\frac{1}{n}\right)}\right) = 1 - e^{-\frac{2}{\varpi}},$$

$$\Omega(1, 0, \varpi) = 1 - e^{-\frac{1}{2\varpi}} \ and$$

$$\lim_{n\to\infty} \Upsilon\left(1, \frac{1}{n-1}, \varpi\right) = \lim_{n\to\infty} \left(1 - e^{\frac{1}{\varpi}(2)\left(\frac{1}{1-\frac{1}{n}}\right)}\right) = 1 - e^{\frac{2}{\varpi}},$$

$$\Upsilon(1, 0, \varpi) = 1 - e^{\frac{1}{2\varpi}}.$$

$\Xi(\varsigma, \vartheta, \varpi), \Omega(\varsigma, \vartheta, \varpi)$ *and* $\Upsilon(\varsigma, \vartheta, \varpi)$ *is not continuous.*

3 Main results

With extra conditions, we shall continue to employ a NbMS in the sense of Definition (2.1) $\lim_{\varpi\to\infty} \Xi(\varsigma, \vartheta, \varpi) = 1$, $\lim_{\varpi\to\infty} \Omega(\varsigma, \vartheta, \varpi) = 0$ and $\lim_{\varpi\to\infty} \Upsilon(\varsigma, \vartheta, \varpi) = 0$.

Lemma 3.1. *Let $\{\varsigma_n\}$ be a sequence in a NbMS $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$. Let's say that there is $\mu \in \left(0, \frac{1}{b}\right)$ such that*

$$\Xi(\varsigma_n, \varsigma_{n+1}, \varpi) \geq \Xi\left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu}\right),$$

$$\Omega(\varsigma_n, \varsigma_{n+1}, \varpi) \leq \Omega\left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu}\right) \ and$$

$$\Upsilon(\varsigma_n, \varsigma_{n+1}, \varpi) \leq \Upsilon\left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu}\right), n \in \mathbb{N}, \varpi > 0 \qquad (1)$$

and there exists $\varsigma_0, \varsigma_1 \in \Lambda$ and $\rho \in (0,1)$ such that

$$\lim_{n \to \infty} *_{i=n}^{\infty} \Xi\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\rho^i}\right) = 1,$$

$$\lim_{n \to \infty} \diamond_{i=n}^{\infty} \Omega\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\rho^i}\right) = 0 \, and$$

$$\lim_{n \to \infty} \diamond_{i=n}^{\infty} \Upsilon\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\rho^i}\right) = 0, \varpi > 0. \tag{2}$$

Then $\{\varsigma_n\}$ is a Cauchy sequence.

Proof. Let $\tau \in (\mu b, 1)$. Clearly, $\sum_{i=1}^{\infty} \tau^i$ is convergent and a thing exists $n_0 \in \mathbb{N}$ such that $\sum_{i=n}^{\infty} \tau^i < 1$ for all $n > n_0$. Let $n > m > n_0$. Since Ξ is b-nondecreasing, Ω and Υ are non-increasing also by (f), (k) and (p) of (Definition: 2.1) for every $\varpi > 0$, we have

$$\Xi(\varsigma_n, \varsigma_{n+m}, \varpi) \geq \Xi\left(\varsigma_n, \varsigma_{n+m}, \frac{\varpi \sum_{i=n}^{n+m-1} \tau^i}{b}\right)$$

$$\geq *\left(\Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi \tau^n}{b^2}\right), \Xi\left(\varsigma_{n+1}, \varsigma_{n+m}, \frac{\varpi \sum_{i=n}^{n+m-1} \tau^i}{b^2}\right)\right)$$

$$\geq *\left(\begin{array}{c} \Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi \tau^n}{b^2}\right), *\left(\Xi\left(\varsigma_{n+1}, \varsigma_{n+2}, \frac{\varpi \tau^{n+1}}{b^3}\right), \cdots \right. \\ \left. \Xi\left(\varsigma_{n+m-1}, \varsigma_{n+m}, \frac{\varpi \tau^{n+m-1}}{b^{m+1}}\right) \cdots\right) \end{array}\right)$$

By (1), it is evident that $\Xi(\varsigma_n, \varsigma_{n+1}, \varpi) \geq \Xi\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\mu^n}\right), n \in \mathbb{N}, \varpi > 0$, and since $n > m$ and $b > 1$, we have

$$\Xi(\varsigma_n, \varsigma_{n+m}, \varpi) \geq *\left(\begin{array}{c} \Xi\left(\varsigma_0, \varsigma_1, \frac{\varpi \tau^n}{b^2 \mu^n}\right), *\left(\Xi\left(\varsigma_0, \varsigma_1, \frac{\varpi \tau^{n+1}}{b^3 \mu^{n+1}}\right), \cdots \right. \\ \left. \Xi\left(\varsigma_0, \varsigma_1, \frac{\varpi \tau^{n+m-1}}{b^{m+1} \mu^{n+m-1}}\right)\right) \end{array}\right)$$

$$\geq *_{i=n}^{n+m-1} \Xi\left(\varsigma_0, \varsigma_1, \frac{\varpi \tau^i}{b^{i-n+2} \mu^i}\right)$$

$$\geq *_{i=n}^{n+m-1} \Xi\left(\varsigma_0, \varsigma_1, \frac{\varpi \tau^i}{b^i \mu^i}\right) \geq *_{i=n}^{\infty} \Xi\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\rho^i}\right), \text{where} \rho = \frac{b\mu}{\tau}.$$

$$\Omega(\varsigma_n, \varsigma_{n+m}, \varpi) \leq \Omega\left(\varsigma_n, \varsigma_{n+m}, \frac{\varpi \sum_{i=n}^{n+m-1} \tau^i}{b}\right)$$

$$\leq \diamond\left(\Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi \tau^n}{b^2}\right), \Omega\left(\varsigma_{n+1}, \varsigma_{n+m}, \frac{\varpi \sum_{i=n}^{n+m-1} \tau^i}{b^2}\right)\right)$$

$$\leq \diamond \left(\begin{array}{c} \Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau^n}{b^2}\right), \diamond\left(\Omega\left(\varsigma_{n+1}, \varsigma_{n+2}, \frac{\varpi\tau^{n+1}}{b^3}\right), \cdots \right. \\ \left. \Omega\left(\varsigma_{n+m-1}, \varsigma_{n+m}, \frac{\varpi\tau^{n+m-1}}{b^{m+1}}\right)\cdots\right) \end{array} \right)$$

By (1), it is evident that $\Omega(\varsigma_n, \varsigma_{n+1}, \varpi) \leq \Omega\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\mu^n}\right), n \in \mathbb{N}, \varpi > 0$, and since $n > m$ and $b > 1$, we have

$$\Omega(\varsigma_n, \varsigma_{n+m}, \varpi) \leq \diamond \left(\begin{array}{c} \Omega\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^n}{b^2\mu^n}\right), \diamond\left(\Omega\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^{n+1}}{b^3\mu^{n+1}}\right), \cdots \right. \\ \left. \Omega\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^{n+m-1}}{b^{m+1}\mu^{n+m-1}}\right)\cdots\right) \end{array} \right)$$

$$\leq \diamond_{i=n}^{n+m-1}\Omega\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^i}{b^{i-n+2}\mu^i}\right)$$

$$\leq \diamond_{i=n}^{n+m-1}\Omega\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^i}{b^i\mu^i}\right)$$

$$\leq \diamond_{i=n}^{\infty}\Omega\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\rho^i}\right), \text{ where } \rho = \frac{b\mu}{\tau}.$$

$$\Upsilon(\varsigma_n, \varsigma_{n+m}, \varpi) \leq \Upsilon\left(\varsigma_n, \varsigma_{n+m}, \frac{\varpi\sum_{i=n}^{n+m-1}\tau^i}{b}\right)$$

$$\leq \diamond\left(\Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau^n}{b^2}\right), \Upsilon\left(\varsigma_{n+1}, \varsigma_{n+m}, \frac{\varpi\sum_{i=n}^{n+m-1}\tau^i}{b^2}\right)\right)$$

$$\leq \diamond \left(\begin{array}{c} \Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau^n}{b^2}\right), \diamond\left(\Upsilon\left(\varsigma_{n+1}, \varsigma_{n+2}, \frac{\varpi\tau^{n+1}}{b^3}\right), \cdots \right. \\ \left. \Upsilon\left(\varsigma_{n+m-1}, \varsigma_{n+m}, \frac{\varpi\tau^{n+m-1}}{b^{m+1}}\right)\cdots\right) \end{array} \right)$$

By (1) it follows that $\Upsilon(\varsigma_n, \varsigma_{n+1}, \varpi) \leq \Upsilon\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\mu^n}\right), n \in \mathbb{N}, \varpi > 0$, and since $n > m$ and $b > 1$, we have

$$\Upsilon(\varsigma_n, \varsigma_{n+m}, \varpi) \leq \diamond \left(\begin{array}{c} \Upsilon\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^n}{b^2\mu^n}\right), \diamond\left(\Upsilon\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^{n+1}}{b^3\mu^{n+1}}\right), \cdots \right. \\ \left. \Upsilon\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^{n+m-1}}{b^{m+1}\mu^{n+m-1}}\right)\cdots\right) \end{array} \right)$$

$$\leq \diamond_{i=n}^{n+m-1}\Upsilon\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^i}{b^{i-n+2}\mu^i}\right)$$

$$\leq \diamond_{i=n}^{n+m-1}\Upsilon\left(\varsigma_0, \varsigma_1, \frac{\varpi\tau^i}{b^i\mu^i}\right)$$

$$\leq \diamond_{i=n}^{\infty}\Upsilon\left(\varsigma_0, \varsigma_1, \frac{\varpi}{\rho^i}\right), \text{ where } \rho = \frac{b\mu}{\tau}.$$

Since $\rho \in (0, 1)$, by (2) follows, it is inferred that $\{\varsigma_n\}$ is a Cauchy sequence. $\quad\square$

Corolary 3.1. *Let $\{\varsigma_n\}$ be a sequence in a NbMS $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$, and let $*$ be of Ω - type. If it's there $\mu \in \left(0, \frac{1}{b}\right)$ like that*

$$\Xi(\varsigma_n, \varsigma_{n+1}, \varpi) \geq \Xi\left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu}\right),$$

$$\Omega(\varsigma_n, \varsigma_{n+1}, \varpi) \leq \Omega\left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu}\right) \text{ and}$$

$$\Upsilon(\varsigma_n, \varsigma_{n+1}, \varpi) \leq \Upsilon\left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu}\right), n \in \mathbb{N}, \varpi > 0, \tag{3}$$

then $\{\varsigma_n\}$ is a Cauchy sequence.

Lemma 3.2. *If for some $\mu \in (0, 1)$ and $\varsigma, \vartheta \in \Lambda$,*

$$\Xi(\varsigma, \vartheta, \varpi) \geq \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right),$$

$$\Omega(\varsigma, \vartheta, \varpi) \leq \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) \text{ and}$$

$$\Upsilon(\varsigma, \vartheta, \varpi) \leq \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \tag{4}$$

where $\varpi > 0$, then $\varsigma = \vartheta$

Proof. Condition (4) implies that
$\Xi(\varsigma, \vartheta, \varpi) \geq \lim\limits_{n \to \infty} \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu^n}\right) = 1, \Omega(\varsigma, \vartheta, \varpi) \leq \lim\limits_{n \to \infty} \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu^n}\right) = 0$ and
$\Upsilon(\varsigma, \vartheta, \varpi) \leq \lim\limits_{n \to \infty} \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu^n}\right) = 0$, where $n \in \mathbb{N}, \varpi > 0$ and by (d), (i) and (n)
of Definition (2.1) it follows that $\varsigma = \vartheta$. $\square$

Theorem 3.1. *Let $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$ be a Complete Neutrosophic b-Metric space (CNbMS) and let $g : \Lambda \to \Lambda$. Let's say that there is $\mu \in \left(0, \frac{1}{b}\right)$ such that*

$$\Xi(g\varsigma, g\vartheta, \varpi) \geq \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right),$$

$$\Omega(g\varsigma, g\vartheta, \varpi) \leq \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) \text{ and}$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) \leq \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) \tag{5}$$

where $\varsigma, \vartheta \in \Lambda, \varpi > 0$ and there exists $\varsigma_0 \in \Lambda$ and $\rho \in (0, 1)$ such that

$$\lim\limits_{n \to \infty} *_{i=n}^{\infty} \Xi\left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i}\right) = 1,$$

$$\lim_{n \to \infty} \diamond_{i=n}^{\infty} \Omega \left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i} \right) = 0 \ and$$

$$\lim_{n \to \infty} \diamond_{i=n}^{\infty} \Upsilon \left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i} \right) = 0 \ where \ \varpi > 0. \tag{6}$$

Then $\mathfrak{g}$ has a one and only fixed point in Λ.

Proof. Let $\varsigma_0 \in \Lambda$ and $\varsigma_{n+1} = g\varsigma_n, n \in \mathbb{N}$. If we take $\varsigma = \varsigma_n$ and $\vartheta = \varsigma_{n-1}$ in (5), then we have

$$\Xi(\varsigma_n, \varsigma_{n+1}, \varpi) \geq \Xi \left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu} \right), \Omega(\varsigma_n, \varsigma_{n+1}, \varpi) \leq \Omega \left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu} \right) \ and$$

$$\Upsilon(\varsigma_n, \varsigma_{n+1}, \varpi) \leq \Upsilon \left(\varsigma_{n-1}, \varsigma_n, \frac{\varpi}{\mu} \right)$$

where $n \in \mathbb{N}, \varpi > 0$, and Lemma (3.1) implies that $\{\varsigma_n\}$ is a Cauchy sequence. Since $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$ is complete, a thing exists $\varsigma \in \Lambda$ like that $\lim_{n \to \infty} \varsigma_n = \varsigma$ and

$$\lim_{n \to \infty} \Xi(\varsigma, \varsigma_n, \varpi) = 1, \lim_{n \to \infty} \Omega(\varsigma, \varsigma_n, \varpi) = 0 \ and$$

$$\lim_{n \to \infty} \Upsilon(\varsigma, \varsigma_n, \varpi) = 0, \ where \varpi > 0. \tag{7}$$

Conditions (5) and by (f), (k) and (p) of Definition (2.1) are used to show that ς is a fixed point for g.

$$\Xi(g\varsigma, \varsigma, \varpi) \geq * \left(\Xi \left(g\varsigma, \varsigma_n, \frac{\varpi}{2b} \right), \Xi \left(\varsigma_n, \varsigma, \frac{\varpi}{2b} \right) \right)$$

$$\geq * \left(\Xi \left(\varsigma, \varsigma_{n-1}, \frac{\varpi}{2b\mu} \right), \Xi \left(\varsigma_n, \varsigma, \frac{\varpi}{2b} \right) \right),$$

$$\Omega(g\varsigma, \varsigma, \varpi) \leq \diamond \left(\Omega \left(g\varsigma, \varsigma_n, \frac{\varpi}{2b} \right), \Omega \left(\varsigma_n, \varsigma, \frac{\varpi}{2b} \right) \right)$$

$$\leq \diamond \left(\Omega \left(\varsigma, \varsigma_{n-1}, \frac{\varpi}{2b\mu} \right), \Omega \left(\varsigma_n, \varsigma, \frac{\varpi}{2b} \right) \right) \ and$$

$$\Upsilon(g\varsigma, \varsigma, \varpi) \leq \diamond \left(\Upsilon \left(g\varsigma, \varsigma_n, \frac{\varpi}{2b} \right), \Upsilon \left(\varsigma_n, \varsigma, \frac{\varpi}{2b} \right) \right)$$

$$\leq \diamond \left(\Upsilon \left(\varsigma, \varsigma_{n-1}, \frac{\varpi}{2b\mu} \right), \Upsilon \left(\varsigma_n, \varsigma, \frac{\varpi}{2b} \right) \right) \ for \ all \ \varpi > 0.$$

By (7), as $n \to \infty$, we get
$\Xi(g\varsigma, \varsigma, \varpi) \geq *(1, 1) = 1, \Omega(g\varsigma, \varsigma, \varpi) \leq \diamond(0, 0) = 0$ and
$\Upsilon(g\varsigma, \varsigma, \varpi) \leq \diamond(0, 0) = 0$.
Suppose that ς and ϑ are fixed points for g. By (5) we have

$$\Xi(\varsigma, \vartheta, \varpi) = \Xi(g\varsigma, g\vartheta, \varpi) \geq \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right),$$

$$\Omega(\varsigma, \vartheta, \varpi) = \Omega(g\varsigma, g\vartheta, \varpi) \leq \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) \text{ and}$$

$\Upsilon(\varsigma, \vartheta, \varpi) = \Upsilon(g\varsigma, g\vartheta, \varpi) \leq \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \varpi > 0$, and through Lemma (3.2) suggests that $\varsigma = \vartheta$. $\qquad\square$

Example 3.1. *Let $\Lambda = [0,1]$. By Example (2.1), for $\theta = 2$. Thus, it follows $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$ is a NbMS with $b = 2$ and Neutrosophic b-Metric $\Xi(\varsigma, \vartheta, \varpi) = e^{\frac{-(\varsigma-\vartheta)^2}{\varpi}}, \Omega(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{-(\varsigma-\vartheta)^2}{\varpi}}, \Upsilon(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{(\varsigma-\vartheta)^2}{\varpi}}, \varsigma, \vartheta \in \Lambda, \varpi > 0$. Let $g(\varsigma) = \omega\varsigma, \omega < \frac{\sqrt{2}}{2}, \varsigma \in \Lambda$. Then*

$$\Xi(g\varsigma, g\vartheta, \varpi) = e^{\frac{-\omega^2(\varsigma-\vartheta)^2}{\varpi}} \geq e^{\frac{-\mu(\varsigma-\vartheta)^2}{\varpi}} = \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right),$$

$$\Omega(g\varsigma, g\vartheta, \varpi) = 1 - e^{\frac{-\omega^2(\varsigma-\vartheta)^2}{\varpi}} \leq 1 - e^{\frac{-\mu(\varsigma-\vartheta)^2}{\varpi}} = \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) \text{ and}$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) = 1 - e^{\frac{\omega^2(\varsigma-\vartheta)^2}{\varpi}} \leq 1 - e^{\frac{\mu(\varsigma-\vartheta)^2}{\varpi}} = \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) \varsigma, \vartheta \in \Lambda, \varpi > 0,$$

for $\frac{1}{b} > \mu > \omega^2$. As a result, Theorem (3.1)'s condition (5) is met and g has a singular fixed point in Λ.

Theorem 3.2. *Let $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$ is a CNbMS and let $g : \Lambda \to \Lambda$. Let's say that there is $\mu \in \left(0, \frac{1}{b}\right)$ like that*

$$\Xi(g\varsigma, g\vartheta, \varpi) \geq \min\left\{\Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Xi\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Xi\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right)\right\},$$

$$\Omega(g\varsigma, g\vartheta, \varpi) \leq \max\left\{\Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Omega\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Omega\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right)\right\} \text{ and}$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) \leq \max\left\{\Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Upsilon\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right)\right\} \quad (8)$$

for all $\varsigma, \vartheta \in \Lambda, \varpi > 0$ and there exists $\varsigma_0 \in \Lambda$, and $\rho \in (0, 1)$ such that

$$\lim_{n\to\infty} *_{i=n}^{\infty}\Xi\left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i}\right) = 1,$$

$$\lim_{n\to\infty} \diamond_{i=n}^{\infty}\Omega\left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i}\right) = 0 \, and$$

$$\lim_{n\to\infty} \diamond_{i=n}^{\infty}\Omega\left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i}\right) = 0 \, for \, all \, \varpi > 0. \quad (9)$$

Then g has a one and only fixed point in Λ.

Proof. Let $\varsigma_0 \in \Lambda$ and $\varsigma_{n+1} = g\varsigma_n, n \in \mathbb{N}$. By (8) with $\varsigma = \varsigma_n$ and $\vartheta = \varsigma_{n-1}$, for every $n \in \mathbb{N}$ and every $\varpi > 0$, we have

$$\Xi(\varsigma_{n+1}, \varsigma_n, \varpi) \geq \min\left\{\Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right)\right\}$$

$$\geq \min\left\{\Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right)\right\}$$

If $\Xi(\varsigma_{n+1}, \varsigma_n, \varpi) \geq \Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), n \in \mathbb{N}, \varpi > 0$, therefore Lemma (3.2) requires that $\varsigma_n = \varsigma_{n+1}, n \in \mathbb{N}$.

So, $\Xi(\varsigma_{n+1}, \varsigma_n, \varpi) \geq \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), n \in \mathbb{N}, \varpi > 0$, and according to Lemma (3.1), $\{\varsigma_n\}$ is a Cauchy sequence.

$$\Omega(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \max\left\{\Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right)\right\}$$

$$\leq \max\left\{\Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right)\right\}$$

If $\Omega(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), n \in \mathbb{N}, \varpi > 0$, therefore Lemma (3.2) requires that $\varsigma_n = \varsigma_{n+1}, n \in \mathbb{N}$.

So, $\Omega(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), n \in \mathbb{N}, \varpi > 0$, and according to Lemma (3.1), $\{\varsigma_n\}$ is a Cauchy sequence.

$$\Upsilon(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \max\left\{\Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right)\right\}$$

$$\leq \max\left\{\Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right)\right\}$$

If $\Upsilon(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), n \in \mathbb{N}, \varpi > 0$, therefore Lemma (3.2) requires that $\varsigma_n = \varsigma_{n+1}, n \in \mathbb{N}$.

So, $\Upsilon(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), n \in \mathbb{N}, \varpi > 0$, and according to Lemma (3.1), $\{\varsigma_n\}$ is a Cauchy sequence.

Consequently, there is $\varsigma \in \Lambda$ like that

$$\lim_{n\to\infty} \varsigma_n = \varsigma \text{ and } \lim_{n\to\infty} \Xi(\varsigma, \varsigma_n, \varpi) = 1,$$

$$\lim_{n\to\infty} \Omega(\varsigma, \varsigma_n, \varpi) = 0 \text{ and}$$

$$\lim_{n\to\infty} \Upsilon(\varsigma, \varsigma_n, \varpi) = 0, \text{ where } \varpi > 0. \tag{10}$$

Let's demonstrate that ς is g's fixed point. Let $\tau_1 \in (\mu b, 1)$ and $\tau_2 = 1 - \tau_1$. By (8) we have

$$\Xi(g\varsigma, \varsigma, \varpi) \geq * \left(\Xi\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Xi\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \right)$$

$$\geq * \left(\min \left\{ \begin{array}{c} \Xi\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Xi\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right) \end{array} \right\}, \Xi\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \right)$$

Taking $n \to \infty$ and using (10), we get

$$\Xi(g\varsigma, \varsigma, \varpi) \geq * \left(\min \left\{ 1, \Xi\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 1 \right\}, 1 \right)$$

$$= * \left(\Xi\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 1 \right) = \Xi\left(\varsigma, g\varsigma, \frac{\varpi}{\rho}\right), \varpi > 0$$

where $\rho = \frac{b\mu}{\tau_1} \in (0, 1)$. So, $\Xi(g\varsigma, \varsigma, \varpi) \geq \Xi\left(g\varsigma, \varsigma, \frac{\varpi}{\rho}\right), \varpi > 0$, and by Lemma (3.2) it follows that $g\varsigma = \varsigma$. Imagine that ς and ϑ are fixed points for g, that is $g\varsigma = \varsigma$ and $g\vartheta = \vartheta$. We obtain condition (8)

$$\Xi(g\varsigma, g\vartheta, \varpi)$$

$$\geq \min \left\{ \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Xi\left(\varsigma, g\varsigma, \frac{\varpi}{\mu}\right), \Xi\left(\vartheta, g\vartheta, \frac{\varpi}{\mu}\right) \right\}$$

$$= \min \left\{ \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), 1, 1 \right\} = \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) = \Xi\left(g\varsigma, g\vartheta, \frac{\varpi}{\mu}\right)$$

$$\Omega(g\varsigma, \varsigma, \varpi)$$

$$\leq \diamond \left(\Omega\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Omega\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \right)$$

$$\leq \diamond \left(\max \left\{ \begin{array}{c} \Omega\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Omega\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right) \end{array} \right\}, \Omega\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \right)$$

Taking $n \to \infty$ and using (10), we get

$$\Omega(g\varsigma, \varsigma, \varpi) \leq \diamond \left(\max \left\{ 0, \Omega\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 0 \right\}, 0 \right)$$

$$= \diamond \left(\Omega\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 0 \right)$$

$$= \Omega\left(\varsigma, g\varsigma, \frac{\varpi}{\rho}\right), \varpi > 0,$$

where $\rho = \frac{b\mu}{\tau_1} \in (0, 1)$. So, $\Omega(g\varsigma, \varsigma, \varpi) \leq \Omega\left(g\varsigma, \varsigma, \frac{\varpi}{\rho}\right), \varpi > 0$, and by Lemma (3.2) it follows that $g\varsigma = \varsigma$.

Imagine that ς and ϑ are fixed points for g, that is $g\varsigma = \varsigma$ and $g\vartheta = \vartheta$. We obtain condition (8)

$$\Omega(g\varsigma, g\vartheta, \varpi)$$
$$\leq \max\left\{\Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Omega\left(\varsigma, g\varsigma, \frac{\varpi}{\mu}\right), \Omega\left(\vartheta, g\vartheta, \frac{\varpi}{\mu}\right)\right\}$$
$$= \max\left\{\Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), 0, 0\right\} = \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) = \Omega\left(g\varsigma, g\vartheta, \frac{\varpi}{\mu}\right)$$

$$\Upsilon(g\varsigma, \varsigma, \varpi)$$
$$\leq \diamond\left(\Upsilon\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Upsilon\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right)\right)$$
$$\leq \diamond\left(\max\left\{\begin{array}{c}\Upsilon\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Upsilon\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right)\end{array}\right\}, \Upsilon\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right)\right)$$

Taking $n \to \infty$ and using (10), we get

$$\Upsilon(g\varsigma, \varsigma, \varpi) \leq \diamond\left(\max\left\{0, \Upsilon\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 0\right\}, 0\right)$$
$$= \diamond\left(\Upsilon\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 0\right)$$
$$= \Upsilon\left(\varsigma, g\varsigma, \frac{\varpi}{\rho}\right), \varpi > 0$$

where $\rho = \frac{b\mu}{\tau_1} \in (0, 1)$. So, $\Upsilon(g\varsigma, \varsigma, \varpi) \leq \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{\rho}\right), \varpi > 0$, and by Lemma (3.2) it follows that $g\varsigma = \varsigma$.

Imagine that ς and ϑ are fixed points for g, that is $g\varsigma = \varsigma$ and $g\vartheta = \vartheta$. We obtain condition (8)

$$\Upsilon(g\varsigma, g\vartheta, \varpi) \leq \max\left\{\Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Upsilon\left(\varsigma, g\varsigma, \frac{\varpi}{\mu}\right), \Upsilon\left(\vartheta, g\vartheta, \frac{\varpi}{\mu}\right)\right\}$$
$$= \max\left\{\Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), 0, 0\right\} = \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) = \Upsilon\left(g\varsigma, g\vartheta, \frac{\varpi}{\mu}\right)$$

for $\varpi > 0$, and it is implied from Lemma (3.2) that $g\varsigma = g\vartheta$, that is $\varsigma = \vartheta$. $\qquad\square$

Example 3.2. *Let* $\Lambda = (0, 2), \Xi(\varsigma, \vartheta, \varpi) = e^{\frac{-(\varsigma-\vartheta)^2}{\varpi}}, \Omega(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{-(\varsigma-\vartheta)^2}{\varpi}},$
$\Upsilon(\varsigma, \vartheta, \varpi) = 1 - e^{\frac{(\varsigma-\vartheta)^2}{\varpi}}, * = *_\theta$ *and* $\diamond = \diamond_\theta$. *Then* $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond, b)$ *is a*

CNbMS with $b = 2$. Let $g(\varsigma) = \begin{cases} 2 - \varsigma, & \varsigma \in (0, 1) \\ 1, & \varsigma \in [1, 2) \end{cases}$

Case 1: *If $\varsigma, \vartheta \in [1, 2)$ then $\Xi(g\varsigma, g\vartheta, \varpi) = 1, \Omega(g\varsigma, g\vartheta, \varpi) = 0$ and $\Upsilon(g\varsigma, g\vartheta, \varpi) = 0$, $\varpi > 0$, and conditions (8) are met.*

Case 2: *If $\varsigma \in [1, 2)$ and $\vartheta \in (0, 1)$, then, for $\mu \in \left(\frac{1}{4}, \frac{1}{2} \right)$, we have*

$$\Xi(g\varsigma, g\vartheta, \varpi) = e^{\frac{-(1-\vartheta)^2}{\varpi}} \geq e^{\frac{-4\mu(1-\vartheta)^2}{\varpi}} = \Xi\left(g\varsigma, \vartheta, \frac{\varpi}{\mu} \right),$$

$$\Omega(g\varsigma, g\vartheta, \varpi) = 1 - e^{\frac{-(1-\vartheta)^2}{\varpi}} \leq 1 - e^{\frac{-4\mu(1-\vartheta)^2}{\varpi}} = \Omega\left(g\varsigma, \vartheta, \frac{\varpi}{\mu} \right)$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) = 1 - e^{\frac{(1-\vartheta)^2}{\varpi}} \leq 1 - e^{\frac{4\mu(1-\vartheta)^2}{\varpi}} = \Upsilon\left(g\varsigma, \vartheta, \frac{\varpi}{\mu} \right), \varpi > 0.$$

Case 3: *As in the earlier instance, for $\mu \in \left(\frac{1}{4}, \frac{1}{2} \right)$, we have*

$$\Xi(g\varsigma, g\vartheta, \varpi) \geq \Xi\left(g\varsigma, \varsigma, \frac{\varpi}{\mu} \right),$$

$$\Omega(g\varsigma, g\vartheta, \varpi) \leq \Omega\left(g\varsigma, \varsigma, \frac{\varpi}{\mu} \right) \text{ and}$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) \leq \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{\mu} \right), \varsigma \in (0, 1), \vartheta \in [1, 2), \varpi > 0.$$

Case 4: *If $\varsigma, \vartheta \in (0, 1)$ then for $\mu \in \left(\frac{1}{4}, \frac{1}{2} \right)$,*

$$\Xi(g\varsigma, g\vartheta, \varpi) \geq e^{\frac{-(\varsigma-\vartheta)^2}{\varpi}} \geq e^{\frac{-(1-\vartheta)^2}{\varpi}} \geq e^{\frac{-4\mu(1-\vartheta)^2}{\varpi}}$$

$$= \Xi\left(g\vartheta, \vartheta, \frac{\varpi}{\mu} \right), \varsigma > \vartheta, \varpi > 0,$$

$$\Xi(g\varsigma, g\vartheta, \varpi) \geq \Xi\left(g\varsigma, \varsigma, \frac{\varpi}{\mu} \right), \varsigma < \vartheta, \varpi > 0,$$

$$\Omega(g\varsigma, g\vartheta, \varpi) \leq 1 - e^{\frac{-(\varsigma-\vartheta)^2}{\varpi}} \leq 1 - e^{\frac{-(1-\vartheta)^2}{\varpi}} \leq 1 - e^{\frac{-4\mu(1-\vartheta)^2}{\varpi}}$$

$$= \Omega\left(g\vartheta, \vartheta, \frac{\varpi}{\mu} \right), \varsigma > \vartheta, \varpi > 0,$$

$$\Omega(g\varsigma, g\vartheta, \varpi) \leq \Omega\left(g\varsigma, \varsigma, \frac{\varpi}{\mu} \right), \varsigma < \vartheta, \varpi > 0 \text{ and}$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) \leq 1 - e^{\frac{(\varsigma-\vartheta)^2}{\varpi}} \leq 1 - e^{\frac{(1-\vartheta)^2}{\varpi}} \leq 1 - e^{\frac{4\mu(1-\vartheta)^2}{\varpi}}$$

$$= \Upsilon\left(g\vartheta, \vartheta, \frac{\varpi}{\mu} \right), \varsigma > \vartheta, \varpi > 0,$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) \leq \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{\mu} \right), \varsigma < \vartheta, \varpi > 0.$$

So conditions (8) are satisfied for all $\varsigma, \vartheta \in \Lambda, \varpi > 0$, and it follows from Theorem (3.2) that $\varsigma = 1$ is a singular fixed point for g.

Theorem 3.3. *Let $(\Lambda, \Xi, \Omega, \Upsilon, *_{\min}, \diamond_{\max})$ be a CNbMS, and let $g : \Lambda \to \Lambda$. If for some $\mu \in \left(0, \frac{1}{b^2}\right)$,*

$$\Xi(g\varsigma, g\vartheta, \varpi) \geq \min \left\{ \begin{array}{c} \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Xi\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Xi\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \Xi\left(g\varsigma, \vartheta, \frac{2\varpi}{\mu}\right), \Xi\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right) \end{array} \right\},$$

$$\Omega(g\varsigma, g\vartheta, \varpi) \leq \max \left\{ \begin{array}{c} \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Omega\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Omega\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \Omega\left(g\varsigma, \vartheta, \frac{2\varpi}{\mu}\right), \Omega\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right) \end{array} \right\} \text{ and }$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) \leq \max \left\{ \begin{array}{c} \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Upsilon\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \Upsilon\left(g\varsigma, \vartheta, \frac{2\varpi}{\mu}\right), \Upsilon\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right) \end{array} \right\}, \quad (11)$$

where $\varsigma, \vartheta \in \Lambda, \varpi > 0$ then g has a unique fixed point in Λ.

Proof. Let $\varsigma_0 \in \Lambda$ and $\varsigma_{n+1} = g\varsigma_n, n \in \mathbb{N}$. By (11) with $\varsigma = \varsigma_n$ and $\vartheta = \varsigma_{n-1}$, using (f, k and p) and the assumption that $* = *_{\min}$ and $\diamond = \diamond_{\max}$ we have

$$\Xi(\varsigma_{n+1}, \varsigma_n, \varpi)$$
$$\geq \min \left\{ \begin{array}{c} \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \\ \min\left\{\Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right), \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)\right\}, \Xi\left(\varsigma_n, \varsigma_n, \frac{\varpi}{\mu}\right) \end{array} \right\}$$
$$\geq \min \left\{ \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right), \Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right) \right\}, n \in \mathbb{N}, \varpi > 0.$$
$$\Omega(\varsigma_{n+1}, \varsigma_n, \varpi)$$
$$\leq \max \left\{ \begin{array}{c} \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \\ \max\left\{\Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right), \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)\right\}, \Omega\left(\varsigma_n, \varsigma_n, \frac{\varpi}{\mu}\right) \end{array} \right\}$$
$$\leq \max \left\{ \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right), \Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right) \right\}, n \in \mathbb{N}, \varpi > 0 \text{ and}$$
$$\Upsilon(\varsigma_{n+1}, \varsigma_n, \varpi)$$
$$\leq \max \left\{ \begin{array}{c} \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \\ \max\left\{\Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right), \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)\right\}, \Upsilon\left(\varsigma_n, \varsigma_n, \frac{\varpi}{\mu}\right) \end{array} \right\}$$
$$\leq \max \left\{ \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right), \Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right) \right\}, \text{ where } n \in \mathbb{N}, \varpi > 0.$$

As in the proof of Theorem (3.2), it is inferred from Lemma (3.2) and Corollary (3.1) that

$\Xi(\varsigma_{n+1}, \varsigma_n, \varpi) \geq \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right), \Omega(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)$ and

$\Upsilon(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right) n \in \mathbb{N}, \varpi > 0$, and $\{\varsigma_n\}$ is a Cauchy sequence. Thus, there is $\varsigma \in \Lambda$ like that $\lim_{n \to \infty} \varsigma_n = \varsigma$ and

$$\lim_{n \to \infty} \Xi(\varsigma, \varsigma_n, \varpi) = 1, \lim_{n \to \infty} \Omega(\varsigma, \varsigma_n, \varpi) = 0 \text{ and}$$
$$\lim_{n \to \infty} \Upsilon(\varsigma, \varsigma_n, \varpi) = 0, \varpi > 0. \tag{12}$$

Let $\tau_1 \in (b^2\mu, 1)$ and $\tau_2 = 1 - \tau_1$. By (11) and (f, k and p) for $* = *_{\min}, \diamond = \diamond_{\max}$ we have

$\Xi(g\varsigma, \varsigma, \varpi)$

$\geq \min\left\{\Xi\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Xi\left(g\varsigma_n, \varsigma, \frac{\varpi\tau_2}{b}\right)\right\}$

$$\geq \min\left\{\min\left\{\begin{array}{c}\Xi\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Xi\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \min\left\{\Xi\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), \Xi\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)\right\}, \\ \Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right)\end{array}\right\}, \Xi\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right)\right\}$$

$\Omega(g\varsigma, \varsigma, \varpi)$

$\leq \max\left\{\Omega\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Omega\left(g\varsigma_n, \varsigma, \frac{\varpi\tau_2}{b}\right)\right\}$

$$\leq \max\left\{\max\left\{\begin{array}{c}\Omega\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Omega\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \max\left\{\Omega\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), \Omega\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)\right\}, \\ \Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right)\end{array}\right\}, \Omega\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right)\right\}$$

$\Upsilon(g\varsigma, \varsigma, \varpi)$

$\leq \max\left\{\Upsilon\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Upsilon\left(g\varsigma_n, \varsigma, \frac{\varpi\tau_2}{b}\right)\right\}$

$$\leq \max\left\{\max\left\{\begin{array}{c}\Upsilon\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Upsilon\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \max\left\{\Upsilon\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), \Upsilon\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)\right\}, \\ \Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right)\end{array}\right\}, \Upsilon\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right)\right\}$$

for all $n \in \mathbb{N}, \varpi > 0$. Taking $n \to \infty$ and using (12), we get

$$\Xi(g\varsigma, \varsigma, \varpi)$$
$$\geq \min \left\{ \min \left\{ 1, \Xi \left(\varsigma, g\varsigma, \frac{\varpi \tau_1}{b\mu} \right), 1, \min \left\{ \Xi \left(g\varsigma, \varsigma, \frac{\varpi \tau_1}{b^2 \mu} \right), 1 \right\}, 1 \right\}, 1 \right\}$$
$$= \Xi \left(g\varsigma, \varsigma, \frac{\varpi \tau_1}{b^2 \mu} \right), \varpi > 0,$$
$$\Omega(g\varsigma, \varsigma, \varpi)$$
$$\leq \max \left\{ \max \left\{ 0, \Omega \left(\varsigma, g\varsigma, \frac{\varpi \tau_1}{b\mu} \right), 0, \max \left\{ \Omega \left(g\varsigma, \varsigma, \frac{\varpi \tau_1}{b^2 \mu} \right), 0 \right\}, 0 \right\}, 0 \right\}$$
$$= \Omega \left(g\varsigma, \varsigma, \frac{\varpi \tau_1}{b^2 \mu} \right), \varpi > 0,$$
$$\Upsilon(g\varsigma, \varsigma, \varpi)$$
$$\leq \max \left\{ \max \left\{ 0, \Upsilon \left(\varsigma, g\varsigma, \frac{\varpi \tau_1}{b\mu} \right), 0, \max \left\{ \Upsilon \left(g\varsigma, \varsigma, \frac{\varpi \tau_1}{b^2 \mu} \right), 0 \right\}, 0 \right\}, 0 \right\}$$
$$= \Upsilon \left(g\varsigma, \varsigma, \frac{\varpi \tau_1}{b^2 \mu} \right), \varpi > 0,$$

and by lemma (3.2) with $\rho = \frac{b^2 \mu}{\tau_1} \in (0, 1)$. Thus, it follows $g\varsigma = \varsigma$.
With reference to condition (11), two fixed points $\varsigma = g\varsigma$ and $\vartheta = g\vartheta$, we have

$$\Xi(g\varsigma, g\vartheta, \varpi)$$
$$\geq \min \left\{ \begin{array}{c} \Xi \left(\varsigma, \vartheta, \frac{\varpi}{\mu} \right), \Xi \left(g\varsigma, \varsigma, \frac{\varpi}{\mu} \right), \Xi \left(g\vartheta, \vartheta, \frac{\varpi}{\mu} \right), \\ \min \left\{ \Xi \left(g\varsigma, \varsigma, \frac{\varpi}{b\mu} \right), \Xi \left(\varsigma, \vartheta, \frac{\varpi}{b\mu} \right) \right\}, \Xi \left(\varsigma, g\vartheta, \frac{\varpi}{\mu} \right) \end{array} \right\}$$
$$= \min \left\{ \Xi \left(\varsigma, \vartheta, \frac{\varpi}{\mu} \right), 1, 1, \min \left\{ 1, \Xi \left(\varsigma, \vartheta, \frac{\varpi}{b\mu} \right) \right\}, \Xi \left(\varsigma, \vartheta, \frac{\varpi}{\mu} \right) \right\}$$
$$= \Xi \left(\varsigma, \vartheta, \frac{\varpi}{b\mu} \right) = \Xi \left(g\varsigma, g\vartheta, \frac{\varpi}{b\mu} \right), \varpi > 0,$$
$$\Omega(g\varsigma, g\vartheta, \varpi)$$
$$\leq \max \left\{ \begin{array}{c} \Omega \left(\varsigma, \vartheta, \frac{\varpi}{\mu} \right), \Omega \left(g\varsigma, \varsigma, \frac{\varpi}{\mu} \right), \Omega \left(g\vartheta, \vartheta, \frac{\varpi}{\mu} \right), \\ \max \left\{ \Omega \left(g\varsigma, \varsigma, \frac{\varpi}{b\mu} \right), \Omega \left(\varsigma, \vartheta, \frac{\varpi}{b\mu} \right) \right\}, \Omega \left(\varsigma, g\vartheta, \frac{\varpi}{\mu} \right) \end{array} \right\}$$
$$= \max \left\{ \Omega \left(\varsigma, \vartheta, \frac{\varpi}{\mu} \right), 0, 0, \max \left\{ 0, \Omega \left(\varsigma, \vartheta, \frac{\varpi}{b\mu} \right) \right\}, \Omega \left(\varsigma, \vartheta, \frac{\varpi}{\mu} \right) \right\}$$
$$= \Omega \left(\varsigma, \vartheta, \frac{\varpi}{b\mu} \right) = \Omega \left(g\varsigma, g\vartheta, \frac{\varpi}{b\mu} \right), \varpi > 0,$$
$$\Upsilon(g\varsigma, g\vartheta, \varpi)$$

$$\leq \max \left\{ \begin{array}{c} \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Upsilon\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \max\left\{\Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{b\mu}\right), \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right)\right\}, \Upsilon\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right) \end{array} \right\}$$

$$= \max\left\{ \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), 0, 0, \max\left\{0, \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right)\right\}, \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right)\right\}$$

$$= \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right) = \Upsilon\left(g\varsigma, g\vartheta, \frac{\varpi}{b\mu}\right), \varpi > 0,$$

and it is implied from Lemma (3.2) that $\varsigma = \vartheta$. $\qquad\qquad \square$

Theorem 3.4. *Let* $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond), * \geq *_\theta, \diamond \leq \diamond_\theta,$ *be a CNbMS, and let* $g : \Lambda \to \Lambda$. *Suppose that for some* $\mu \in \left(0, \frac{1}{b^2}\right)$,

$$\Xi(g\varsigma, g\vartheta, \varpi) \geq \min \left\{ \begin{array}{c} \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Xi\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Xi\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \sqrt{\Xi\left(g\varsigma, \vartheta, \frac{2\varpi}{\mu}\right)}, \Xi\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right) \end{array} \right\}$$

$$\Omega(g\varsigma, g\vartheta, \varpi) \leq \max \left\{ \begin{array}{c} \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Omega\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Omega\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \sqrt{\Omega\left(g\varsigma, \vartheta, \frac{2\varpi}{\mu}\right)}, \Omega\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right) \end{array} \right\}$$

$$\Upsilon(g\varsigma, g\vartheta, \varpi) \leq \max \left\{ \begin{array}{c} \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Upsilon\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \sqrt{\Upsilon\left(g\varsigma, \vartheta, \frac{2\varpi}{\mu}\right)}, \Upsilon\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right) \end{array} \right\}, \quad (13)$$

$\varsigma, \vartheta \in \Lambda, \varpi > 0$ *and there exists* $\varsigma_0 \in \Lambda$ *and* $\rho \in (0, 1)$ *such that*

$$\lim_{n\to\infty} *_{i=n}^{\infty} \Xi\left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i}\right) = 1,$$

$$\lim_{n\to\infty} \diamond_{i=n}^{\infty} \Omega\left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i}\right) = 0 \text{ and}$$

$$\lim_{n\to\infty} \diamond_{i=n}^{\infty} \Omega\left(\varsigma_0, g\varsigma_0, \frac{\varpi}{\rho^i}\right) = 0 \text{ for all } \varpi > 0. \qquad (14)$$

Then g *has a unique fixed point in* Λ.

Proof. Let $\varsigma_0 \in \Lambda$ and $\varsigma_{n+1} = g\varsigma_n, n \in \mathbb{N}$. Taking $\varsigma = \varsigma_n$ and $\vartheta = \varsigma_{n-1}$ in condition (13), by using (f, k and p) and $* \geq *_\theta, \diamond \leq \diamond_\theta$ we have

$$\Xi(\varsigma_{n+1}, \varsigma_n, \varpi) \geq \min \left\{ \begin{array}{c} \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \\ \sqrt{\Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right) . \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)}, \Xi\left(\varsigma_n, \varsigma_n, \frac{\varpi}{\mu}\right) \end{array} \right\},$$

$$\Omega(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \max \left\{ \begin{array}{c} \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \\ \sqrt{\Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right).\Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)}, \Omega\left(\varsigma_n, \varsigma_n, \frac{\varpi}{\mu}\right) \end{array} \right\},$$

$$\Upsilon(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \max \left\{ \begin{array}{c} \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{\mu}\right), \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{\mu}\right), \\ \sqrt{\Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right).\Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)}, \Upsilon\left(\varsigma_n, \varsigma_n, \frac{\varpi}{\mu}\right) \end{array} \right\},$$

$n \in \mathbb{N}, \varpi > 0$. Since $\Xi(\varsigma, \vartheta, \varpi)$ is b-nondecreasing in ϖ and $\sqrt{(a.b)} \geq \min\{a, b\}$, $\Omega(\varsigma, \vartheta, \varpi)$ and $\Upsilon(\varsigma, \vartheta, \varpi)$ is b-nonincreasing in ϖ and $\sqrt{(a.b)} \leq \max\{a, b\}$ we obtain that

$$\Xi(\varsigma_{n+1}, \varsigma_n, \varpi) \geq \min\left\{\Xi\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right), \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)\right\},$$

$$\Omega(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \max\left\{\Omega\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right), \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)\right\} \text{ and }$$

$$\Upsilon(\varsigma_{n+1}, \varsigma_n, \varpi) \leq \max\left\{\Upsilon\left(\varsigma_{n+1}, \varsigma_n, \frac{\varpi}{b\mu}\right), \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right)\right\}.$$

By Lemma (3.2) and (3.1) it follows that

$$\Xi\left(\varsigma_{n+1}, \varsigma_n, \varpi\right) \geq \Xi\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right),$$

$$\Omega\left(\varsigma_{n+1}, \varsigma_n, \varpi\right) \leq \Omega\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right) \text{ and }$$

$$\Upsilon\left(\varsigma_{n+1}, \varsigma_n, \varpi\right) \leq \Upsilon\left(\varsigma_n, \varsigma_{n-1}, \frac{\varpi}{b\mu}\right).$$

where $n \in \mathbb{N}, \varpi > 0$, and $\{\varsigma_n\}$ is a Cauchy sequence. Since $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond)$ is a complete space, there exists $\varsigma \in \Lambda$ such that $\lim_{n \to \infty} \varsigma_n = \varsigma$ and

$$\lim_{n \to \infty} \Xi(\varsigma, \varsigma_n, \varpi) = 1,$$
$$\lim_{n \to \infty} \Omega(\varsigma, \varsigma_n, \varpi) = 0 \text{ and}$$
$$\lim_{n \to \infty} \Upsilon(\varsigma, \varsigma_n, \varpi) = 0, \ \varpi > 0. \tag{15}$$

Let $\tau_1 \in (b^2\mu, 1)$ and $\tau_2 = 1 - \tau_1$. By (13) and (f, k and p) for $* = *_\theta$ and $\diamond \leq \diamond_\theta$ we have

$$\Xi(g\varsigma, \varsigma, \varpi)$$
$$\geq * \left(\Xi\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Xi\left(g\varsigma_n, \varsigma, \frac{\varpi\tau_2}{b}\right)\right)$$

$$\geq * \left(\min \left\{ \begin{array}{c} \Xi\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Xi\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \sqrt{\Xi\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right).\Xi\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)}, \\ \Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right) \end{array} \right\}, \Xi\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \right).$$

$$\geq * \left(\min \left\{ \begin{array}{c} \Xi\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Xi\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \min\left\{\Xi\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), \Xi\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)\right\}, \\ \Xi\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \Xi\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \end{array} \right\} \right),$$

$$\Omega(g\varsigma, \varsigma, \varpi)$$

$$\leq \diamond \left(\Omega\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Omega\left(g\varsigma_n, \varsigma, \frac{\varpi\tau_2}{b}\right) \right)$$

$$\leq \diamond \left(\max \left\{ \begin{array}{c} \Omega\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Omega\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \sqrt{\Omega\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right).\Omega\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)}, \\ \Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right) \end{array} \right\}, \Omega\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \right),$$

$$\leq \diamond \left(\max \left\{ \begin{array}{c} \Omega\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Omega\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \max\left\{\Omega\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), \Omega\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)\right\}, \\ \Omega\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \Omega\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \end{array} \right\} \right) \text{ and}$$

$$\Upsilon(g\varsigma, \varsigma, \varpi)$$

$$\leq \diamond \left(\Upsilon\left(g\varsigma, g\varsigma_n, \frac{\varpi\tau_1}{b}\right), \Upsilon\left(g\varsigma_n, \varsigma, \frac{\varpi\tau_2}{b}\right) \right)$$

$$\leq \diamond \left(\max \left\{ \begin{array}{c} \Upsilon\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Upsilon\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \sqrt{\Upsilon\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right).\Upsilon\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)}, \\ \Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right) \end{array} \right\}, \Upsilon\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \right),$$

$$\leq \Diamond \left(\max \left\{ \begin{array}{c} \Upsilon\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b\mu}\right), \Upsilon\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), \\ \Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \\ \max\left\{\Upsilon\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), \Upsilon\left(\varsigma, \varsigma_n, \frac{\varpi\tau_1}{b^2\mu}\right)\right\}, \\ \Upsilon\left(\varsigma_n, \varsigma_{n+1}, \frac{\varpi\tau_1}{b\mu}\right), \Upsilon\left(\varsigma_{n+1}, \varsigma, \frac{\varpi\tau_2}{b}\right) \end{array} \right\} \right),$$

for all $\vartheta \in \mathbb{N}$ and $\varpi > 0$. Taking $n \to \infty$ and using (15), we get

$$\Xi(g\varsigma, \varsigma, \varpi)$$
$$\geq * \left(\min\left\{1, \Xi\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 1, \min\left\{\Xi\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), 1\right\}, 1\right\}, 1\right)$$
$$= \Xi\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right),$$
$$\Omega(g\varsigma, \varsigma, \varpi)$$
$$\leq \Diamond \left(\max\left\{0, \Omega\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 0, \max\left\{\Omega\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), 0\right\}, 0\right\}, 0\right)$$
$$= \Omega\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right) \text{ and}$$
$$\Upsilon(g\varsigma, \varsigma, \varpi)$$
$$\leq \Diamond \left(\max\left\{0, \Upsilon\left(\varsigma, g\varsigma, \frac{\varpi\tau_1}{b\mu}\right), 0, \max\left\{\Upsilon\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), 0\right\}, 0\right\}, 0\right)$$
$$= \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi\tau_1}{b^2\mu}\right), \varpi > 0$$

and by Lemma (3.2) with $\rho = \frac{b^2\mu}{\tau_1} \in (0,1)$ as a result, $g\varsigma = \varsigma$.
Imagine that ς and ϑ are fixed points for g. By condition (13) we have

$$\Xi(g\varsigma, g\vartheta, \varpi)$$
$$\geq * \left(\begin{array}{c} \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Xi\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Xi\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \sqrt{\Xi\left(g\varsigma, \varsigma, \frac{\varpi}{b\mu}\right), \Xi\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right)}, \Xi\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right) \end{array} \right)$$
$$\geq * \left(\Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), 1, 1, \min\left\{1, \Xi\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right)\right\}, \Xi\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right)\right)$$
$$= \Xi\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right) = \Xi\left(g\varsigma, g\vartheta, \frac{\varpi}{\mu}\right),$$
$$\Omega(g\varsigma, g\vartheta, \varpi)$$

$$\leq \diamond \left(\begin{array}{c} \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Omega\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Omega\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \sqrt{\Omega\left(g\varsigma, \varsigma, \frac{\varpi}{b\mu}\right), \Omega\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right), \Omega\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right)} \end{array} \right)$$

$$\leq \diamond \left(\Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), 0, 0, \max\left\{0, \Omega\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right)\right\}, \Omega\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) \right)$$

$$= \Omega\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right) = \Omega\left(g\varsigma, g\vartheta, \frac{\varpi}{\mu}\right), \text{ and}$$

$$\Upsilon\left(g\varsigma, g\vartheta, \varpi\right)$$

$$\leq \diamond \left(\begin{array}{c} \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), \Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{\mu}\right), \Upsilon\left(g\vartheta, \vartheta, \frac{\varpi}{\mu}\right), \\ \sqrt{\Upsilon\left(g\varsigma, \varsigma, \frac{\varpi}{b\mu}\right), \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right), \Upsilon\left(\varsigma, g\vartheta, \frac{\varpi}{\mu}\right)} \end{array} \right)$$

$$\leq \diamond \left(\Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right), 0, 0, \max\left\{0, \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right)\right\}, \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{\mu}\right) \right)$$

$$= \Upsilon\left(\varsigma, \vartheta, \frac{\varpi}{b\mu}\right) = \Upsilon\left(g\varsigma, g\vartheta, \frac{\varpi}{\mu}\right), \varpi > 0.$$

Therefore, it follows from Lemma (3.2) that $\varsigma = \vartheta$. $\qquad\square$

Example 3.3. *Let* $\Lambda = \{0, 1, 3\}, \Xi\left(\varsigma, \vartheta, \varpi\right) = e^{\frac{-(\varsigma-\vartheta)^2}{\varpi}}, \Omega\left(\varsigma, \vartheta, \varpi\right) = 1 - e^{\frac{-(\varsigma-\vartheta)^2}{\varpi}}$
and $\Upsilon\left(\varsigma, \vartheta, \varpi\right) = 1 - e^{\frac{(\varsigma-\vartheta)^2}{\varpi}}, * = *_\theta, \diamond = \diamond_\theta$. *Then* $(\Lambda, \Xi, \Omega, \Upsilon, *, \diamond)$ *is a CNbMS with* $b = 2$. *Define the function* $g : \Lambda \to \Lambda$ *as follows:* $g_0 = g_1 = 1, g_3 = 0$. *Observe that if* $\varsigma = \vartheta$ *or* $\varsigma, \vartheta \in [0, 1]$, *then* $\Xi\left(g\varsigma, g\vartheta, \varpi\right) = 1, \Omega\left(g\varsigma, g\vartheta, \varpi\right) = 0$
and $\Upsilon\left(g\varsigma, g\vartheta, \varpi\right) = 0, \varpi > 0$ *and condition (13) is fulfilled.*
Case: 1 *Let* $\varsigma = 0$ *and* $\vartheta = 1$. *Then since* $\mu \in \left(\frac{1}{9}, \frac{1}{4}\right)$, *we have that*

$$\Xi\left(g\varsigma, g\vartheta, \varpi\right) = e^{\frac{-1}{\varpi}} \geq \min\left\{e^{\frac{-\mu}{\varpi}}, e^{\frac{-\mu}{\varpi}}, 1, 1, e^{\frac{-\mu}{\varpi}}\right\},$$

$$\Omega\left(g\varsigma, g\vartheta, \varpi\right) = 1 - e^{\frac{-1}{\varpi}} \leq \max\left\{1 - e^{\frac{-\mu}{\varpi}}, 1 - e^{\frac{-\mu}{\varpi}}, 0, 0, 1 - e^{\frac{-\mu}{\varpi}}\right\}, \text{ and}$$

$$\Upsilon\left(g\varsigma, g\vartheta, \varpi\right) = 1 - e^{\frac{1}{\varpi}} \leq \max\left\{1 - e^{\frac{-\mu}{\varpi}}, 1 - e^{\frac{-\mu}{\varpi}}, 0, 0, 1 - e^{\frac{-\mu}{\varpi}}\right\}.$$

Case: 2 *Let* $\varsigma = 0$ *and* $\vartheta = 3$. *Then since* $\mu \in \left(\frac{1}{9}, \frac{1}{4}\right)$, *we have that*

$$\Xi\left(g\varsigma, g\vartheta, \varpi\right) = e^{\frac{-1}{\varpi}} \geq \min\left\{e^{\frac{-9\mu}{\varpi}}, e^{\frac{-\mu}{\varpi}}, e^{\frac{-9\mu}{\varpi}}, e^{\frac{-\mu}{\varpi}}, 1\right\},$$

$$\Omega\left(g\varsigma, g\vartheta, \varpi\right) = 1 - e^{\frac{-1}{\varpi}} \leq \max\left\{1 - e^{\frac{-9\mu}{\varpi}}, 1 - e^{\frac{-\mu}{\varpi}}, 1 - e^{\frac{-9\mu}{\varpi}}, 1 - e^{\frac{-\mu}{\varpi}}, 0\right\}, \text{ and}$$

$$\Upsilon\left(g\varsigma, g\vartheta, \varpi\right) = 1 - e^{\frac{1}{\varpi}} \leq \max\left\{1 - e^{\frac{-9\mu}{\varpi}}, 1 - e^{\frac{-\mu}{\varpi}}, 1 - e^{\frac{-9\mu}{\varpi}}, 1 - e^{\frac{-\mu}{\varpi}}, 0\right\}.$$

Case: 3 *Let* $\varsigma = 1$ *and* $\vartheta = 3$. *Then selecting* $\mu \in \left(\frac{1}{9}, \frac{1}{4}\right)$, *we have that*

$$\Xi\left(g\varsigma, g\vartheta, \varpi\right) = e^{\frac{-1}{\varpi}} \geq \min\left\{e^{\frac{-4\mu}{\varpi}}, 1, e^{\frac{-9\mu}{\varpi}}, e^{\frac{-\mu}{\varpi}}, e^{\frac{-\mu}{\varpi}}\right\},$$

$$\Omega\left(g\varsigma, g\vartheta, \varpi\right) = 1 - e^{\frac{-1}{\varpi}} \leq \max\left\{1 - e^{\frac{-4\mu}{\varpi}}, 0, 1 - e^{\frac{-9\mu}{\varpi}}, 1 - e^{\frac{-\mu}{\varpi}}, 1 - e^{\frac{-\mu}{\varpi}}\right\} \ and$$

$$\Upsilon\left(g\varsigma, g\vartheta, \varpi\right) = 1 - e^{\frac{1}{\varpi}} \leq \max\left\{1 - e^{\frac{4\mu}{\varpi}}, 0, 1 - e^{\frac{9\mu}{\varpi}}, 1 - e^{\frac{\mu}{\varpi}}, 1 - e^{\frac{\mu}{\varpi}}\right\}.$$

Therefore we conclude that $\mu \in \left(\frac{1}{9}, \frac{1}{4}\right)$, *condition (13) is fullfilled for* $\varsigma, \vartheta \in \Lambda$ *and* $\varpi > 0$.
Therefore, $\varsigma = 1$ *is a one and only fixed point and all conditions of Theorem (3.4) are met.*

4 Conclusion

An extension of the t-norm that is countable is used in this paper. Using this condition of expansion and contraction, we can show that the sequence in NbMS is a Cauchy sequence. By using our findings, some fixed point theorems are additionally established.

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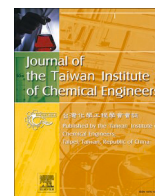
Simple construction of gadolinium cobaltite perovskite (GdCoO₃): Unveiling the dynamic electrode potential for pseudocapacitors

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ABSTRACT

Background: The intermittent nature of renewable energy resources has led to an ongoing mismatch between energy demands and supply in modern societies. To address this issue, the design of well-defined nanostructures with unique physicochemical nature, has emerged as a promising solution. In this regard, perovskite (ABO₃) nanostructured electrode materials have shown great potential in enhancing electrochemical performance.
Methods: A simple co-precipitation technique was utilized to synthesize perovskite phase gadolinium-based binary metal oxide, i.e., GdCoO₃. The obtained physiochemical characterization data revealed that the GdCoO₃ electrode material possessed a high surface area that facilitates the diffusion of ions and enhances its specific capacitance.
Significant findings: Extensive electrochemical characterization techniques were used (cyclic voltammetry (CV), electrochemical impedance spectroscopy (EIS), and galvanostatic charging and discharging (GCD)) to analyze the electrochemical properties of the electrode material in this study. The charge storage mechanism of GdCoO₃ was determined to be diffusion-controlled. When tested in an aqueous electrolyte (3 M KOH), GdCoO₃ nano-electrode exhibited an excellent specific capacitance (519 F g^{-1}) by a current density (1 A g^{-1}). Furthermore, it demonstrates a significant capacitance retention rate (CRR) of 84.9 % subsequently 5000 cycles indicating its potential for long-term stability. The fabricated battery-type electrode holds promise in various applications including electric motors, flexible electronics, and energy storage devices.

1. Introduction

In recent days, electrochemical sustainable energy-storing devices received much consideration owing to an increasing trend of fuel crisis and the need for new renewable energy in the world. Among the available energy storage devices, the supercapacitor is highly attractive due to its rapid charge/discharge rate, elevated power density, steady cycling performance, and extended operational life. Consequently, the fabrication of supercapacitor using a cost-effective novel electrode material with better electrochemical responses than rechargeable batteries are also very important nowadays. Various electrodes were made using carbonaceous materials, transition metal hydroxides, nitrides, oxides, and sulfides, and their blended mode has been utilized in supercapacitors so far for enhancing power density and electronic properties but those materials capacitance was found lower than their theoretical capacitance due to inappropriate morphology, lower surface area, deprived electrical conductivity and stability [1–4]. The performance of supercapacitors may be improved by varying the size, and shape of nanomaterials which creates a significant effect in energy storage devices like supercapacitors. In addition, the surface modification may also

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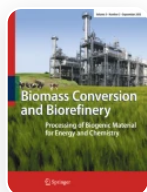
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Abstract

The aim of the present study is to synthesize iron oxide nanoparticles (FeONPs) and to evaluate the antibacterial efficacy against selected bacteria from aqueous leaf extract of *Chamaecrista nigricans*, a medicinal under shrub. The precursor for the synthesis of FeONPs was 0.01 M Ferric chloride hexahydrate ($FeCl_3.6H_2O$). The structural and optical characterization of FeONPs were performed using ultra violet–visible spectroscopy (UV–vis), Fourier transform infrared (FTIR) spectroscopy, X-ray diffraction (XRD), scanning electron microscopy (SEM), and field emission scanning electron microscopy with energy dispersive X-ray spectroscopy (FESEM-EDX). The effect of antibacterial activity

was envisaged with the synthesized FeONPs by means of the agar well diffusion method against three gram–negative bacterial pathogens, namely, *Escherichia coli* (MTCC 1610), *Klebsiella pneumoniae* (MTCC618), and *Pseudomonas aeruginosa* (MTCC 741). The effectiveness of FeONPs was determined by measuring the zones of inhibition in millimeter (mm). UV−visible spectroscopy at 238 nm clearly indicates the presence of FeONPs. The FTIR spectroscopic analysis verified the existence of metallic ions of Fe and bioactive components derived from the plant. The X-ray diffraction technique was employed to ascertain the phase and crystal structure. The results obtained from FESEM-EDX demonstrated that the nanoparticles of iron oxide exhibited a spherical morphology, with a mean diameter of 17 nm in terms of surface volume. Antibacterial investigation has revealed that the FeONPs has greater efficacy in inhibiting the growth of *Escherichia coli* when compared to *Pseudomonas aeruginosa*.

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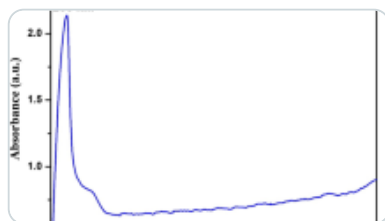
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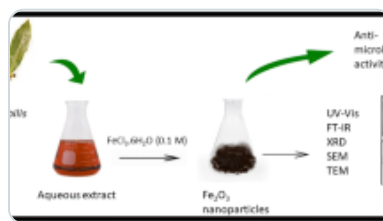
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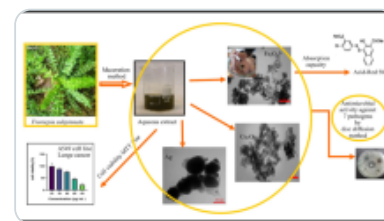
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Data availability

The present study's data are included in the manuscript file and are available without restriction.

Code availability

Not applicable.

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Contributions

MG analyzed the data and revised the manuscript. Antibacterial study was conducted by MS. The FeONP was synthesized and characterized and original draft was prepared by VP. MM and MV designed and supervised the work and were also involved in addition of information and editing of manuscript.

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The present study does not involve experiments involving human or animal.

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All authors have given their consent for participation in this submission and possible publication of this study.

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A Role of Doctors During the Covid-19 Pandemic Situations

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Abstract
Specialists structure a fundamental piece of a viable reaction to the COVID-19 pandemic. We contend they have an obligation to take an interest in pandemic reaction because of their extraordinary abilities, yet these abilities shift between various specialists, and their obligations are compelled by other contending rights. We reason that while specialists ought to be urged to fulfill the need for clinical guide in the pandemic, the individuals who put forth the penances and expanded attempts are owed corresponding commitments consequently. At the point when corresponding commitments are not met, specialists are additionally defended in quitting explicit errands, as long as this is proportionate to the neglected commitment.
Keywords: Doctors, Covid – 19, Role, Pandemic Situations, Solicitation Permissions

Specialists structure a fundamental piece of a viable reaction to the COVID-19 pandemic. They have basic parts in conclusion, regulation and treatment, and their obligation to treat in spite of expanded individual dangers is fundamental for an effective general wellbeing response.1 Frontline laborers have been encountering high work volume, individual danger and cultural strain to fulfill uncommon needs for medical services. In spite of this conventional general wellbeing morals has given little consideration to the assurance of the privileges of doctors.

We will consider the part of specialists during the COVID-19 pandemic, zeroing in principally on the British National Health Service (NHS), by addressing the accompanying four inquiries: what is the nature and extent of the obligations of medical care suppliers? To whom perform these responsibilities apply? What equal commitments to specialists exist from their bosses and patients? Also, how should specialists respond when these equal commitments are not met

Albeit these inquiries are similarly essential to all medical services experts, we center around specialists since it is critical to recognize that diverse medical care experts have various jobs, and this may influence the degree of their word related dangers and obligations. Further examination on the part of medical attendants, physiotherapists and other wellbeing experts ought to be attempted yet is past the extent of this article.

Carry out specialists have an obligation to treat in illness episodes and pandemics, for example, COVID-19

Concerning moral hypothesis, various grounds have been offered for the view that specialists have an obligation to treat or a commitment to give care to patients.3 respects to pandemics, claims about the obligations of specialists are frequently grounded in alleged 'extraordinary obligations' or 'job related' obligations. As such, by righteousness of their calling, specialists have more rigid commitments of helpfulness than most, and they have commitments to a predefined gathering of people (their patients) that non-clinical staff have no commitment to help. Clark contends that the obligation can be advocated concerning: (A) uncommon abilities controlled by medical services experts, which imply that they are exceptionally positioned to give help, consequently expanding their commitment; (B) the person's openly settled on choice to enter the calling with the information on what the work involves and the idea of the related dangers; and (C) the common agreement between medical services experts and the general public in which they work. In any case, it appears to be certain that the obligation to treat can't be 'supreme'- that specialists have an obligation to work paying little mind to the situation. Specialists have rights to assurance and to mind during an irresistible infection episode, as do different individuals from society.

In past scourges, contentions that have defended the surrender of patients incorporate pointlessness when medication is weak to help and the exhaustion of limited HR (medical services laborers) when doctors fall ill. Solo calls attention to that in the midst of emergency, the obligations getting from specialists' numerous jobs may regularly clash, and the issue with numerous records of the obligations of specialists is that they neglect to recognize these pressures and to consider laborers as different specialists having a place with a more extensive local area. Specialists, for example, may have an obligation to really focus on patients just as an obligation to really focus on their own families by ensuring them (and thus themselves) from infection.4 Failure to represent the impacts of mediations, for example, school terminations on the medical services labor force just fuel the issue of stressed medical care limit by eliminating truly necessary individuals from the labor force.

Unique Conditions

Arising dangers of irresistible infections, for example, COVID-19 interest substantially more than that specialists keep on filling in as should be expected. Pandemics may require longer hours (and relating expanded openness to the infection), likely isolates and tasks outside one's ordinary specialty.3 What recognizes typical obligation from acting past the obligation at hand isn't in every case clear-cut. However, experience so far proposes that in the current scourge specialists are liable to hazard of illness, danger of death, weariness from broadened hours, moral pain (when being involved with troublesome treatment choices, for example, prioritization of patients for ventilators) and potential lawful and expert dangers when be approached to work at the restrictions of their competencies.

The 2003 SARS plague gave some significant bits of knowledge into the experience and pressing factors on medical services laborers during a scourge, just as featuring some significant holes in moral reasoning and practice. A significant number of the individuals who treated patients with SARS raised worries about the insurances that were given to defend their own wellbeing and that of their family members. Some would not go to SARS wards bringing about perpetual excusal, and some decided to leave the calling post-pandemic. Notably, it was perceived during SARS that there is no agreement concerning how expressly and severely the necessities for the obligation to mind ought to be stated. Scholars suggested arrangement ahead of time with neighborhood and public expert clinical relationship to get understanding about the degree of expert commitments in a pandemic. This was recommended to incorporate the advancement of clear and unambiguous rules in regards to the expert rights and obligations and the moral obligations and commitments

of medical care experts during such outbreaks. Almost twenty years after the fact, there stays little agreement and lucidity over sensible assumptions on the clinical labor force. This is a grave coming up short.

Is Quitting Reasonable

In the event that constraints of the obligation of care are not supreme in any case, fairly, compelled by a few variables characterized by the qualities of contending rights and duties, it very well might be inferred that a few specialists might be ethically legitimized in quitting forefront work. Quitting could be all the more effectively advocated if this forefront work stretches out past their subject matter or potentially puts critical individual or actual weights on them. For example, a more established specialist with diabetes may protest moving to forefront COVID-19 work, given the proposal that higher mortality is related with COVID-19 disease in the individuals who are more seasoned or have comorbidities.

There are two primary issues with an 'quit' strategy. In the first place, contemplations of decency. For each specialist who quits, this places an extra weight on their partners. Specifically, it could imply that weights of the episode are set on explicit gatherings, for example, youthful, childless specialists who will be overburdened and are probably going to have less ability. As Reid has brought up, the wellbeing hazard denied by one individual is left to be consumed by another person, either inside the medical care group or by society on the loose. Second, quitting may altogether affect tolerant trust, which has perceived significance in the adequacy of pandemic response. Others have contended that the requirement for wellbeing authorities to be seen as the specialists, whose goals and activities are to the greatest advantage of people in general, is basic to cultivating trust. The clinical calling is frequently portrayed as having a certain agreement with society to give clinical assistance in the midst of crisis,19 which incorporates a sensible and genuine assumption by the public that specialists will react in an irresistible sickness emergency.13 Trust in clinical experts, and the medical care framework overall, might be subverted were there a public insight that specialists were reluctant to act to the greatest advantage of patients by neglecting to fulfill the uncommon need for medical services.

While these are unfortunate results that ought to be tended to, these protests are not sufficient good avocations to pressure all specialists into working in conditions past their normal job that they consider to be ethically, mentally or truly unacceptable.4 The good, mental and actual adequacy of bleeding edge COVID-19 work is probably going to be controlled by various significant variables, like the degree of individual danger of genuine sickness, individual conditions, strength, profession stage and met/neglected corresponding commitments (talked about further beneath).

To Whom Carry out these Responsibilities Apply?

While we have so far took a gander at the obligation of care of specialists, this is certainly not a homogenous gathering. All specialists have an obligation (inside impediments) to really focus on their patients, however an intensely unwell and irresistible patient probably won't be inside the ordinary scope of training of certain claims to fame. In the event that we contrast an irresistible sickness doctor and an ophthalmic specialist, two contentions could be made for the more prominent obligation of the irresistible illness doctor: this could emerge from both their more noteworthy expertise in overseeing patients with COVID-19 and by their decision of claim to fame. It very well may be contended that by deciding to prepare in the administration of irresistible illnesses they have verifiably consented to acknowledge a foreordained degree of risk,4 and thusly, bleeding edge pandemic work may fall inside the extent of concurred obligations. To put it plainly, the commitment to partake in forefront work is higher for the individuals who decided to 'select

in' to higher danger work at claim to fame preparing, than for the individuals who decided to 'quit'. This neither infers the irresistible infection specialist has a flat out obligation to take part in bleeding edge work paying little heed to individual danger or that the ophthalmic specialist has no obligation, rather that the level of commitment may fluctuate between fortes inside specific requirements.

Authorized specialists may not be the lone specialists requested to help care for patients during the pandemic. In the UK, the public authority called for ongoing retired folks and senior clinical understudies to chip in the reaction to COVID-19. This prompts the subject of when proficient or professional commitments start and end. As clinical understudies' preparation is sponsored by the UK government, this could be reason for the beginning of an obligation to society, with this just having the option to be acknowledged later in clinical school when understudies may have abilities that could help in the reaction. Albeit the period of most clinical understudies implies they are probably going to be okay for difficulties of COVID-19, it isn't certain that the abilities clinical understudies have are adequately valuable to counter the maybe more serious dangers of mental and enthusiastic pain in the individuals who have not created strength by working in the wellbeing framework. The obligation to return for retired people, or those that have decided to leave medication, ought not be grounded in their decision to be a specialist. It would be an unduly broad obligation whenever comprehended as a deep rooted responsibility enduring past an expert vocation. Notwithstanding, as ongoing retired people in intense consideration claims to fame could be very gifted staff, this obligation could be ground in a 'obligation of simple salvage'. This implies that 'in the event that it is in your ability to save a day to day existence or keep something terrible from happening where the expense to you is immaterial, less, or has tantamount good significance, you are ethically obliged to do it'. However, on account of COVID-19 retired people are by their age in danger of death and genuine ailment, testing that the expense is negligible or this an 'simple salvage'. Besides, emergency unit and ventilators (just as specialists) are a limited asset. Putting retired folks on the forefront may create a net mischief, as opposed to a net advantage.

What are the Corresponding Commitments to Specialists from their Managers and Patients?
A significant part of the writing centers around the obligations of specialists and substantially less is said of what is owed to them consequently. Studies have discovered that specialists feel they have an obligation to work in particular if certain commitments are satisfied by the state or institution. This incorporates fundamentals, for example, boss commitments to set up measures to secure specialists and their families, like the arrangement of individual defensive gear (PPE) and of immunization for themselves or relatives (if available).

Proof additionally proposes that eagerness may not really be expanded by the usage of reasonable or practical arrangements yet might be rather more profoundly established in various components, for example, the degree to which specialists feel remembered for readiness arranging, or different socio demographic and family issues. These are probably going to impact specialists' readiness to work during a pandemic or other emergency. Standards of care may must be changed, and the lawful repercussions of these changed principles should be addressed.1 This incorporates giving satisfactory reimbursement cover to anybody requested to act outside of their set up job.

In conclusion, though much has been composed on what makes a decent specialist, less consideration has been said about the great patient.4 Obligations towards the expert have been proposed to incorporate advising the expert about any known danger of infection,22 honesty, consistence, resilience and trust11 and to 'identify with doctors taking all things together of the prudent ways that oversee human interrelationships and social conduct'.23 In this pandemic, it is the conduct of the potential, instead of the genuine patient that is of highest significance. A current patient–specialist relationship can't be the premise of these commitments, since key practices for

the general population incorporate those to forestall them turning into a patient by drawing in with disease control estimates, for example, wearing a face covering and social separating.

How Should Specialists Respond if these Complementary Commitments are not met?

As these corresponding commitments towards specialists stay verifiable and fairly unclear, this can leave specialists in a troublesome situation on the proper behavior on the off chance that they see commitments are not met. An unmistakable road for specialists to go to may be their expert bodies, however up until now, UK proficient rules remain strikingly questionable with regards to the assumptions for specialists. The clear disappointment of bosses and the state to meet commitments to specialists has gone to the cutting edge in the UK over deficiencies and saw insufficiency of PPE. Specialists have been addressing whether they can decline to treat patients on the off chance that they don't have satisfactory PPE. Here, the General Medical Council's(GMC) Good Medical Practice exhorts that 'Specialists should not won't treat patients on the grounds that their ailment may put the specialist in danger', however that all accessible advances ought to be required to limit that hazard prior to giving therapy, which incorporates heightening worries to employers.24 Unfortunately, this the two places the weight of the ethical dynamic unequivocally on the specialist, as opposed to the business, and presents a primary issue for specialists who may really effectively be forced into unsuitable working conditions by managers.

So how should specialists respond if winding up in like position? In the wake of setting up the commitment is neglected, specialists ought to be advocated in quitting quiet consideration assignments. Nonetheless, as opposed to considering this quitting a COVID-19 patient consideration job, this ought to be viewed as an errand explicit quit proportionate to the commitment not met. For instance, if a crisis doctor approaches a liquid safe careful cover, however not to a FFP3 respirator veil, it would be proportionate for that specialist to decline to do explicit high-hazard strategies that the cover is fundamental for, like intubation, yet not proportionate to decline to give any mind to a patient at all.25 Importantly, this quit isn't explicit to really focusing on patients with COVID-19 yet would apply to all medical care arrangement undertakings that are influenced by the COVID-19 pandemic. This could incorporate conditions, for example, PPE deficiencies causing absence of outfits for specialists. A specialist would then be advocated on the off chance that they wouldn't work if the absence of outfit left them at more serious danger of getting a blood-borne infection.

Conclusion

We have contended that specialists have an obligation to take an interest in pandemic reaction because of their unique abilities, yet these abilities fluctuate between various specialists, and their obligations are compelled by other contending rights. In unique conditions, for example, a pandemic, these commitments might be viewed as supererogatory (in morals, a demonstration is supererogatory on the off chance that it is acceptable yet not ethically needed to be finished). This implies a quit strategy, in view of an appraisal of these contending obligations, while not attractive would be morally reasonable.

From both a moral and sober minded viewpoint, specialists should be seen with regards to rich lives with various contending requests. We ought to urge specialists to fulfill the need for clinical guide in the pandemic, yet the individuals who put forth the penances and expanded attempts are owed equal commitments consequently. At the point when complementary commitments are not met, specialists are additionally defended in quitting explicit errands, as long as this is proportionate to the neglected commitment. To urge specialists to fulfill the need for medical services arrangement and to forestall primary shameful acts subverting equal commitments owed to specialists, it is essential to unequivocally characterize the complementary commitments owed

to specialists. We propose the base commitments in table 1. Further work is needed to characterize these expert principles that should consider the limit with regards to underlying elements that may impact specialist's office and should intend to meet these proportional commitment

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Entrepreneurship: A Review of Entrepreneurial Traits among Women in Coimbatore City

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Abstract
An entrepreneur is someone who effectively controls a commercial venture; they are the individuals who initiate and manage new businesses, often starting out small. Entrepreneurship involves the process of conceiving, launching, and organizing a new business endeavor. Entrepreneurs are the driving force behind these ventures, engaging in various activities to establish themselves as self-employed individuals. Entrepreneurship encompasses the actions taken by these individuals, who seek to capitalize on business opportunities by leveraging their skills and resources. It involves the proactive management of financial and material assets, with the entrepreneur assuming the role of risk-taker. While they may reap the rewards of their endeavors, entrepreneurs must also continuously navigate the need for additional resources as their ventures grow and expand.
Keywords: EDPs, Women Entrepreneur, Entrepreneurship, Fiscal

Introduction

Women have increasingly broken free from the confines of their homes and ventured into various professions and services, demonstrating equal business acumen to their male counterparts. They are proving to be organized and self-motivated entrepreneurs. The reasons for women entering the world of entrepreneurship are numerous in our society. Entrepreneurship offers women a significant opportunity to overcome their societal and familial subordination. Policy makers have recognized the importance of promoting entrepreneurship among women, with initiatives such as incorporating women into economic growth plans. The government emphasizes the need for special Entrepreneurial Development Programs (EDPs) for women in its industrial policies.

Today, there exists a network of institutions across the country to support women entrepreneurs, including commercial banks and financial institutions. These organizations provide financial support at concessional rates and organize industrial fairs and exhibitions to promote women's entrepreneurship. EDPs create awareness among women entrepreneurs, while ongoing training in various management areas is essential. Establishing separate industrial estates for women entrepreneurs can provide a conducive environment for their growth. It's advisable to establish a dedicated "Women Entrepreneurs Guidance Cell" within existing banks and financial institutions to offer support and guidance.

Furthermore, research efforts should be intensified to identify the challenges faced by women entrepreneurs. Organizing visits to successful women entrepreneurs can inspire new entrants. Efforts should also focus on promoting and developing rural women's entrepreneurship through schemes like village adoption programs. Although still in its early stages, there's growing global recognition of women's contributions to economic development, with women playing a significant role in the ongoing business revolution nationwide. These efforts aim to uplift the social and economic status of women, leading to multifaceted socio-economic benefits.

In India, women-owned businesses are flourishing, reflecting their hidden entrepreneurial potential and evolving societal and economic roles. Women entrepreneurs are characterized by their ability, knowledge, and adaptability in business ventures. They embody a strong desire to make a positive impact and contribute to both family and society. With increased media exposure, women are more aware of their rights and opportunities in the digital era. They are venturing into diverse fields such as design, interior decoration, export, publishing, and garment manufacturing, exploring new avenues for economic participation.

Review of Literatures

"Traits of Successful Entrepreneurs" authored by Dr. H. Ramanada Singh, a distinguished Professor from the Department of Business Administration at Assam University in November 2013. The research methodology employed in this article encompasses sampling design and data collection. Initially, fourteen trait variables were considered crucial in assessing the defining characteristics of successful entrepreneurs in Assam. However, subsequent factor analysis revealed that pivotal traits contributing to the success of food processing entrepreneurs in Assam include innovation, a futuristic mindset, risk-taking ability, adaptability, and commitment.

"The Indian Environment for Entrepreneurship and Small Business Development" written by Kshetri, Nir in 2011. The author utilizes bar diagrams and charts to analyze and draw comparisons between India and China. Structural inertia within the Indian economy has served as a formidable barrier hindering the fostering of modern entrepreneurship. Notably, India's heavy dependence on agriculture has resulted in resource constraints for entrepreneurial development. For instance, competition for water allocation between industry and agriculture among different states has sparked inter-state rivalries and tensions.

"Women Entrepreneurship in India - Changes and Challenges" penned by Vedamani Basil Hans, an Associate Professor and Head at the Department of Economics, St. Aloysies Evening College, Mangalore, India. Data analysis is presented in the form of graphs and tables. Despite advancements, women's entrepreneurship in India remains at a nascent stage. Women encounter significant discrimination, yet global and domestic shifts have fostered the growth of women entrepreneurship in India.

"Women Entrepreneurship in India - Problems and Essential Strategies" authored by Dr. Jyoti Agarwal, an Assistant Professor at the College of Administration and Finance in March 2018. Through their study, the author notes that women entrepreneurs constitute a formidable driving force in the contemporary corporate landscape. They demonstrate competence in balancing maternal duties with entrepreneurship, comprising nearly half of all current business owners. The government is urged to implement policies and schemes aimed at assisting women entrepreneurs in overcoming prevailing barriers.

"Women Entrepreneurship and Innovations in India: An Exploratory Study" conducted by Hamant Kumar P. Bulsara, Jyoti Chandwani, and Shailesh Gandhi in February 6, 2014. The study highlights the escalating participation of women in entrepreneurship in India. Recognition of women entrepreneurs' role in economic development is growing, prompting measures to promote women entrepreneurship.

"Student's Willingness to Become an Entrepreneur: A Survey of Non-Business Students of President University" authored by Suresh Kumar in January 2013. This study investigates the inclination of non-business students towards entrepreneurship. Validity testing was conducted using factor analysis via KMO and Bartlett's Test, and reliability testing via Cronbach's Alpha. The study suggests a potential decrease in future unemployment rates due to entrepreneurship.

"Women Entrepreneurship: Research Review and Further Directions" authored by Vanithayadav and Jeemol Unni from the Institution of Rural Management Anand (IRMA), Anand, India in October 10, 2016. The objective of this study was to analyze the volume of papers published on women entrepreneurship in journals. It discusses the research review approach adopted and presents findings from searches conducted using e-databases. The study advocates for expanding the concept of women entrepreneurship environment to encompass comparisons across class, sector, region, and nations. It reports findings from 19 literature reviews on women entrepreneurship published between 1986 and 2016.

"A Study on Women Entrepreneurship and their Problems in the Development in Western Maharashtra" authored by Jadhawrao Madhavi Sugaraj and Dr. Salve P.S in March-April 2014. This study utilizes secondary data collected from the fourth All India Census on Micro, Small, and Medium Enterprises (MSMEs) published by the Government of India. It aims to analyze women's participation in entrepreneurial activities and their contribution to economic development. Additionally, the study examines existing government policies and programs aimed at promoting and strengthening women entrepreneurship in India. It explores various scenarios, noting the concentration of women enterprises in the micro segment of the MSME sector and advocating for increased participation across all financial sectors.

"Stress Faced by Women Entrepreneurs: A Critical Review" authored by Kokila.M and R. Subhashini. This study underscores the significance of women entrepreneurs and their contribution to India's economic growth. It reviews the stress and challenges confronted by women entrepreneurs.

"Women Entrepreneurs" by C. Mcphee in July 2011. This study delves into the reasons behind the scarcity of women founders and leaders in technology businesses. It examines unique entrepreneurial challenges faced by women and proposes necessary changes to facilitate an increase in the number of women entrepreneurs.

"Women Entrepreneurship - A Literature Review" by CMA Dr. Meenu Maheswari and Mr. Priya Sodani in February 2015. This literature review explores the importance of women entrepreneurs and examines various factors influencing women's participation in entrepreneurship across different global contexts. The authors emphasize the need for training and financial assistance to motivate Indian women to play a significant role in the country's GDP.

"Analysis of the Evolving Role of Entrepreneurship in India's Economic Development" by A. Muhammed Sajad and J. Sathya Priya. This review highlights entrepreneurship's potential to generate significant employment opportunities with relatively low investment, leveraging local skills and resources for both entrepreneurs' benefit and India's overall growth. The authors argue that an entrepreneurial awakening will accelerate India's growth trajectory, potentially propelling it into the ranks of developed nations by at least 2050.

"Some Critical Issues of Women Entrepreneurship in Rural India" by Vijay M. Kumbhar in January 2012. This study focuses on women entrepreneurship in rural India, drawing upon secondary data gathered from various research articles and reports. The article discusses the challenges and constraints faced by women entrepreneurs in rural settings, highlighting the need for increased participation to support India's rapid growth.

"A Study of Women Entrepreneurs Engaged in Food Processing" by Samani, Veena.S in 2008. This chapter reviews studies conducted among female clientele, emphasizing the historical struggle

of women to attain deserved status. It also highlights successful women entrepreneurs in the food processing sector.

"Women Entrepreneurship in India" by Ms. Yogita Sharma in December 2013. This study primarily focuses on women entrepreneurs in small and medium enterprises, analyzing recent literature and government initiatives aimed at supporting women entrepreneurs.

"Women Entrepreneurs in India: A Literature Review" by Neha Tiwari from I.I.S.E Group of Institutions, Lucknow, India. This study endeavors to decipher the concept, profile, and dynamics of women entrepreneurship in India, with a focus on analyzing its prevalence. The selection criteria for existing research on women entrepreneurship include highly cited studies contextualizing women entrepreneurship. The literature review synthesizes a diverse profile of women entrepreneurs in India, representing various age groups and demographic backgrounds.

"Review of Literature on Women Entrepreneurs" by Norhalimah Idris and Joyce Tan in the GBSE Journal in 2017. This paper examines previous studies, noting a predominant focus on entrepreneurs in general, leaving a gap for concentrated research on women entrepreneurs. Thus, the study reviews literature concerning major obstacles and motivations for women entering entrepreneurship.

"Female Entrepreneurship and the Metanarrative of Economic Growth: A Critical Review of Underlying Assumptions" by Hannah Dean, Gretchen Larsen, Jackie Ford, and Muhammad Akram in December 26, 2017. The authors critique the narrative surrounding female entrepreneurship's role in economic growth and the underlying assumptions. They advocate for a postmodern feminist epistemology to challenge prevailing narratives and promote a diverse understanding of female entrepreneurship.

"Female Entrepreneurship" by Muhammad Usama Anwar and Dr. Amber Gul Rashid. This study examines the literature on female entrepreneurship, particularly focusing on the developing world and Pakistan. It proposes a conceptual framework for understanding the phenomenon, highlighting its significance in light of recent global events.

"Analyzing the Growth of Women Entrepreneurship in India" by Thomas Asha E. in 2016. This study explores the rising prominence of women entrepreneurship in India's current economic landscape. The increasing presence of women entrepreneurs has led to demographic shifts in business, impacting economic growth. The study presents a model encompassing various factors crucial for fostering the growth of women entrepreneurship in India.

"Women Entrepreneurship: Transforming from Domestic Household to Financial Independence" by PHD Research Bureau in March 2019. Drawing on a study of women entrepreneurship in India conducted by Banking on Women in 2013, this article highlights the measurable and comparative results indicating increased awareness among women, particularly in rural areas. It underscores the importance of promoting entrepreneurship among women and making them aware of available schemes and benefits.

"Literature Review of Women Entrepreneurs and Statutory Policies" by Rupali Jitendra Khaire. This paper critically analyzes statutory policies aimed at women's empowerment and their impact on women entrepreneurship. It reviews substantive findings and theoretical frameworks from various secondary sources such as books, periodicals, and websites.

"Female Entrepreneurship and the Metanarrative of Economic Growth: A Critical Review of Underlying Assumptions" by Hannah Dean, Gretchen Larsen, Jackie Ford, and Muhammad Akram in 2017. This critical review examines literature on female entrepreneurship's role in economic growth and the mechanisms sustaining it. Central to the discussion is the 'underperformance hypothesis,' suggesting that, all else being equal, female entrepreneurs tend to be less successful than their male counterparts according to conventional economic performance measures.

"Research on Women Entrepreneurs: Challenges to (and from) the Broader Entrepreneurship Literature?" by Jennifer E. Jennings and Candida G. Brush in April 22, 2013. This paper documents the development of women's entrepreneurship research, assessing its contributions to the broader entrepreneurship literature. It also discusses challenges posed by this broader literature.

"Women Entrepreneurship in India - Research India Publications" by S. Mahajan in 2013. This conceptual paper underscores women entrepreneurs' potential as emerging human resources in the 21st century. It offers recommendations to foster the spirit of women entrepreneurship and support women in becoming successful entrepreneurs.

Conclusion

The rising prominence of women entrepreneurship has become a contemporary focus of concern. This research endeavor specifically targets women entrepreneurs. A comprehensive understanding of Indian women, particularly their identity and their propensity to chart new territories, would remain deficient without delving into the annals of Indian history. Here, women have not only traversed various paths but also assimilated diverse role models. While some have embraced entrepreneurial endeavors, others have pursued careers in employment, entertainment, or leadership. Meanwhile, millions of others have adhered to conventional societal roles, epitomizing idealized stereotypes.

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A STUDY ON JOB SATISFACTION OF SCHOOL TEACHERS

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ABSTRACT

The present study is descriptive and analytical in nature in the field of Personnel Management which is other wise known as Human Resource Management. Human resource is considered to be the most powerful and valuable asset for any organization. Human resources may be considered to be the total knowledge, skill, creative abilities, talents and aptitudes of an organization work force, as well as values, attitudes and benefits, acquired through knowledge and skills, represented by the talents and aptitude of the employed person. The job satisfaction is the talk of the day. It is true that satisfied employee contribute their maximum for the organization's goal achievement. Thus it is on the part of the employer to tackle the problem promptly to have a satisfied work face. This study on job satisfaction is an empirical investigation carried out among teachers employed in Private Schools and Government Aided Schools.

KEY WORDS

Human Resource Management, Job Satisfaction, Level of Satisfaction, Organization, Personnel Management, and School Teachers.

INTRODUCTION

An organization may be manufacturing firm, a business concern an insurance company, a governmental agency, social organizations, hospital, a university, a public or private school system, or a religious trust, cause, oriented groups and even families. It may be small or large, simple or complex. An organization is a human grouping in which work is done for the accomplishment of some specific goals or missions. The goals of the organizations, will not be able the same but an organization has its own objectives, which may remain relatively constant but they are likely to be modified over a period of time, as per the changing needs and circumstances.

Human resource is considered to be the most powerful and valuable asset for any organization. Human resources may be considered to be the total knowledge, skill, creative abilities, talents and aptitudes of an organization work force, as well as values, attitudes and benefits, acquired through knowledge and skills, represented by the talents and aptitude of the employed person. It may be noted, here, that human resources should be utilized to the maximum possible extent in order to achieve individual and organizational objectives. It is thus the employee's performance, which ultimately decides the attainment of goals.

The success and growth of any organization whatever may be the character, depends upon effective use of its human resources. That is why in any organization the people employed are realized to be the richest asset as well as most problematic one to be managed and maintained. The problem of handling human resources is quite different from that of physical different from that of physical material and financial resources because the former is not standardized, interchangeable, or passive always. Thus the performance of these factors is to a large extent influenced by motivation and job satisfaction.

Education is an important index of human development. It empowers the individual with necessary skills and importance for achieving important personal and social goals and thereby contributing to the social development. The importance of education for social economic, political and environmental progress is universally recognized. Moreover, education brings about peace and amity among people though mutual understand and co-operation.

Quality education is a prerequisite for social, economic and material growth of society along with its cultural refinement. Teaching is basically a competence building, change fostering and knowledge enhancing job, which has the capability to convert any human being into a wizard. The teacher bestowed with task of not only training the students in the fundamental field of knowledge, but also providing them with critical quality of mind and character that will serve them in the hour of crisis. Hence, an attempt is made to study the job satisfaction of school teachers.

STATEMENT OF THE PROBLEM

The study of job satisfaction is very much essential to every management comes to know the area of satisfaction and dissatisfaction and satisfied and dissatisfied group of persons. Generally it welcomes the employees' comments and suggestions, which in turn enables the management to resource the organization structure and work environment, when the employees realize that they have been recognized, they feel better to the management. This type of study also gives a clear picture to the management the defective area particularly in supervision and training to shape the employees perception.

Satisfaction is an abstract term that lacks a satisfactory definition no human being is 100 percent satisfied for if the reaches that level the causes to be human by nature. The same holds for dissatisfaction. Employees can't classify as satisfied one or dissatisfied one. A single person may have satisfaction is an aspect of the same factor. The degrees may also differ. The maintenance of satisfaction for over a period of time is impossible. The same thing that satisfies a man in the morning may not satisfy him in the evening. Even if does the degree of satisfaction in those two times may be different. In this respect dissatisfaction falls in line with its antonym.

Job satisfaction is out of the most crucial but controversial issues in industrial psychology and behavioral management in organization. In this context, a study on job satisfaction is a paramount importance, as the nature of job differs based on the category of employees and on their needs. To ensure better health and live longer at the satisfaction on the job has a positive impact even on the employee's personal like job-satisfaction has spin-off effect in developing a psychologically healthy society. Satisfied employer becomes satisfied citizens with positive attitude towards life. This motivated the researcher to study on the job satisfaction of school teachers because education is important index of human development.

REVIEW OF LITERATURE

A study by the Indian Bank's Association (2002) on the job satisfaction among bank employees reveals that the overall satisfaction is lowest in private banks. In the case of SBI and its associates, the figure is 23% while 25 percent of the nationalized bank staff suffers from poor job satisfaction; only 28% of the private sector bank employees surveyed has a high level of job satisfaction as against 27% in nationalized banks and 25% in the state bank group. Interestingly, job satisfaction is highest in the clerical category and lowest among executive for all banks. Thimmanna G Bhat (2016) in a research paper titled "A Study on Challenges in Human Resource Management", aims at studying the challenges in HRM. It suggested measures to overcome the challenges and highlight the emerging challenges in HRM. Atyeh Mohammed Alzhrani (2020) in an article "A Research Paper on Human Resources Planning, Process and Developing" address the career development and the stages of a career program. It reflects on the evolution of the individual's work over time, emphasizing the stages: exploration (attempt of new roles), establishment, maintenance and descent, demarcating activities by stages of development, their relationship with the chronological age of the individual and the relative level of participation and influence, associated with each stage.

OBJECTIVE OF THE STUDY

The main objective of the study is to analyse the level of job satisfaction of school teachers in Madurai District.

METHODOLOGY

The study is based on both primary and secondary data. Primary data have been collected from the sample school teachers who are working in Private (Matriculation) Schools and Government Aided (Non-Matriculation) Schools through interview schedule. The secondary data have been collected from various books, journals, articles, magazines and related researches.

Data were collected through a specially designed job satisfaction interview schedule. A total sample of 150 comprising of 75 Private School Teachers and 75 Government Aided School Teachers were selected were selected from Madurai District for the study. Before finalization, the schedule were given to the 15 sample teachers and pre-tested properly. Finally, the revised schedule consists of 24 components covering all the aspects. For analyzing the job satisfaction of school teachers, the collected data through schedule were tabulated. Hypotheses were also framed and tested.

LEVEL OF JOB SATISFACTION

To study the level of job satisfaction school teachers, 75 teachers from Private School and 75 teachers Government Aided School were selected for collecting information. The information collected from the sample respondents and is classified into high and low. The level of job satisfaction of school has been analysed through percentage and chi-squrre test. The resuls are based on the collected information only.

Type of School and Level of Job Satisfaction

An overall view of the job satisfaction level is given in the Table 1. A statistical hypothesis is also framed for testing, i.e. there is no significant difference in the level of job satisfaction between Private School and Government Aided School teachers.

Table 1
Type of School and Level of Job Satisfaction

Type of School	Level of Job Satisfaction		Total
	High	Low	
Private Schools	25 (33.3%)	50 (66.7%)	75 (100%)
Government Aided Schools	37 (49.3%)	38 (50.7%)	75 (100%)
Total	62	88	150

Calculated Value of Chi-squre = 4.31

Table 1 show that out of 75 teachers from Private Schools, 25 are feeling high job satisfaction and 50 are feeling low job satisfaction. But in the case of Government Aided School teachers, out of 75 respondents 37 are feeling high job satisfaction and 38 are feeling low job satisfaction. The chi-square test reveals that there is no association between level of job satisfaction and type of schools.

Gender and Level of Job Satisfaction

An attempt is made to analyze the level of satisfaction on the basis of gender and the result is presented in the following Table 2. The hypothesis framed as "there is no association between gender and the level of job satisfaction in school teachers".

Table 2
Gender and Level of Job Satisfaction

Gender	Level of Job Satisfaction		Total
	High	Low	
Male	29	31	60
Female	33	57	90
Total	62	88	150

Calculated Value of Chi-squre = 2.21

It is clear from Table 2 that out of 60 male teachers 29 are feeling high job satisfaction and out of 90 female teachers 33 are feeling high job satisfaction. Hence, it is concluded that the male teachers are always highly job satisfied than the female teachers. The calculated value is less than the table value. Hence, the hypothesis is accepted. The chi-square test indicates that there is no relationship between gender and level of job satisfaction.

Age and Level of Job Satisfaction

In the present study, there were teachers in different age groups. Hence, the researcher feels that it is appropriate to consider age as one of the deciding factors of the level of job satisfaction. The nature of relationship between age of a teacher and level of job satisfaction is discussed in Table 3. The hypothesis framed as "there is no significant association between age and level of job satisfaction".

Table 3
Relationship between Age and Level of Satisfaction

Age Level	Level of Job Satisfaction		Total
	High	Low	
Below 25 Years	12	48	60
25 to 35 Years	21	19	40
35 to 45 Years	17	8	25
Above 45 Years	12	13	25
Total	62	88	150

Calculated Value of Chi-squre = 21.10

Table 3 reveals that out of 60 teachers with age below 25 years, 12 are feeling high job satisfaction and 48 are felt low. In the next 25 to 35 age group, 21 teachers are highly satisfied out of total of 40. Out of 25 respondents in the age group '35 to 45 years', 17 are highly satisfied. In the age group 'above 45 years', majority respondents, i.e. 13 respondonts, have low satisfaction level. Through the chi-square test result it is inferred that job satisfaction is not a dependent factor of age.

Education and Level of Job Satisfaction

It is unavoidable to study the effect of qualification on the level of job satisfaction. A qualification used in the study refers to educational qualification possessed by the teacher at the time of taking this research. The qualification and job satisfaction were related by using the hypothesis as "there is no significant difference between educational qualification and level of job satisfaction".

Table 4
Education and Level of Job Satisfaction

Education	Level of Job Satisfaction		Total
	High	Low	
Graduate	5	15	20
Post Graduate	8	10	18
Teacher Training Course	32	33	65
B.Ed.	17	30	47
Total	62	88	150

Calculated Value of Chi-squre = 20.27

Table 4 shows that out of 150 respondents, 65 respondents have studied teacher training courses. Of them, 33 have low level of satisfaction. Among the 47 B.Ed. degree holders, 30 respondents feel low satisfaction in their job. It is inferred from the Table 4 that majority of respondents feels low satisfaction in their job. The chi-square test based on this table also proves that there is significant dependence between level of job satisfaction and educational qualification.

Marital Status and Level of Job Satisfaction

The variable marital status is considered as one of the factor for considering the level of satisfaction. The researcher has analysed the marital status and job satisfaction level by setting the hypothesis as "there is no significant relationship between marital status and job satisfaction of school teachers".

Table 5
Marital Status and Level of Job Satisfaction

Marital Status	Level of Job Satisfaction		Total
	High	Low	
Married	45	25	70
Unmarried	17	63	80
Total	**62**	**88**	**150**

Calculated Value of Chi-squre = 30.49

Table 5 reveals that out of 70 married teachers, 45 are feeling high job satisfaction, and 25 are feeling low job satisfaction. Out of 80 unmarried teachers, 63 have low job satisfaction and 17 having high job satisfaction. It is inferred from the study that married respondents have high level of satisfaction on their job. It is also proved from the chi-square test that there is relationship between marital status and level of job satisfaction.

Income and Level of Job satisfaction

The researcher has made an attempt to analyse the level of job satisfaction based on the income of the teacher, because income is considered as one of the important variable. The hypothesis set for this variable is "there is no significant relationship between income and level of job satisfaction".

Table 6
Iincome and Level of Job Satisfaction

Income	Level of Job Satisfaction		Total
	High	Low	
Less than Rs.10,000	6	23	29
Rs.10,000 to Rs.15,000	7	11	18
Rs.15,000 to Rs.20,000	26	14	40
Above Rs.20,000	23	40	63
Total	**62**	**88**	**150**

Calculated Value of Chi-square = 58.49

It is evident from Table 6 that out of 29 respondents in 'less than Rs.10000' income category, 6 are feeling high job satisfaction and 23 are feeling low satisfaction. In the 'above Rs.20,000' income category, majority of respondents, i.e. 40 respondents out of 63, have low level of satisfaction. Table 6 shows that a majority of respondents have high level satisfaction in the income category of Rs.15000 to Rs.20000. The framed hypothesis is rejected and hence it is concluded that there is relationship between Income and level of job satisfaction.

Family Size and Level of Job Satisfaction

Table 7 shows the relationship between family size and level of job satisfaction. The following hypothesis is framed for this purpose, i.e. "there is no association between size of the family and level of job satisfaction of the school teachers".

Table 7
Family Size and Level of Job Satisfaction

Family Size	Level of Job Satisfaction		Total
	High	Low	
Upto 2 Members	31	51	82
3 to 4 Members	14	10	24
5 to 6 Members	13	13	26
Above 6 Members	4	14	18
Total	62	88	150

Calculated Value of Chi-square = 5.70

It is clear from the Table 7 that majoriy of teachers have low level of job satisfaction which is evident from the family size of 'upto 2 members' and 'above 6 members'. Only 14 respondents out of 24 have high level of job satisfaction. As the calculated value of greater than the table value at 5% level, the hypothesis is rejected. It concludes from the above information that family size of the teachers' influences the level of job satisfaction.

Nature of Family and Level of Job Satisfaction

Table 8 shows the relationship between nature of family and level of job satisfaction. The hypothesis framed for this is as "there is no association between nature of family and level of job satisfaction".

Table 8
Nature of Family and Level of Job Satisfaction

Nature of family	Level of Job Satisfaction		Total
	High	Low	
Joint	29	26	55
Individual	33	62	95
Total	62	88	150

Calculated Value of Chi-square = 6.93

Table 8 reveals that out of 150 teachers, 55 are in joint family nature and 95 teachers family type is individual type. Majority of joint family members opines that the level of job satisfaction is high than the individual family category. The chi-square test indicates that there is relationship between family size and level of job satisfaction.

Experience and Level of Job Satisfaction

There is an absolute controversy prevails among the authors in the field of personal management and among different researchers ventured in this area regarding the experience of the employees and their job satisfaction. Based on this fact, the researcher is interested to study the relationship between experience and level of job satisfaction for which the hypothesis framed is as "there is an independent relationship between experience and level of job satisfaction".

Table 9
Experiene and Level of Job Satisfaction

Experience	Level of Job Satisfaction		Total
	High	Low	
Below 5 Years	27	45	72
5 to 10 Years	19	15	34
11 to 15 Years	10	26	36
Above 15 Years	6	2	8
Total	62	88	150

Calculated Value of Chi-square = 19.26

It is evident from Table 9 that out of 72 respondents who are having 'below 5 years' experience, a major portion of respondents have low level of satisfaction. It is also depicted in '11 to 15 years' experience category. Only a minimum portion of respondents have high level of satisfaction which is evidenced in '5 to 10 years' and 'above 15 years' experience categories. It is inferred from above information that the above hypothesis is rejected. Hence, there is a relationship between experience and level of job satisfaction.

MAJOR FINDINGS

1. It is evident from the study that the male teachers are highly satisfied thatn the female teachers.
2. The study shows that the teachers in 25 to 45 years age group have high level satisfaction than the other age groups.
3. In this study, most of the teachers having teachers training course and B.Ed. degree course have low level of satisfaction.
4. It is inferred from the study that married respondents have high level of satisfaction on their job.
5. It is clear that a major portion of respondents falls in 'less than Rs.10,000' and 'above s.20,000' income category and they have low level of satisfaction in their job.
6. It is clear that majoriy of teachers have low level of job satisfaction which is evident from the family size of 'upto 2 members' and 'above 6 members'.
7. Majority of joint family members opines that the level of job satisfaction is high than the individual family category.
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OBJECTIVE OF THE STUDY

The main objective of the study is to analyse the level of job satisfaction of school teachers in Madurai District.

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The study is based on both primary and secondary data. Primary data have been collected from the sample school teachers who are working in Private (Matriculation) Schools and Government Aided (Non-Matriculation) Schools through interview schedule. The secondary data have been collected from various books, journals, articles, magazines and related researches.

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To study the level of job satisfaction school teachers, 75 teachers from Private School and 75 teachers Government Aided School were selected for collecting information. The information collected from the sample respondents and is classified into high and low. The level of job satisfaction of school has been analysed through percentage and chi-squrre test. The resuls are based on the collected information only.

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An overall view of the job satisfaction level is given in the Table 1. A statistical hypothesis is also framed for testing, i.e. there is no significant difference in the level of job satisfaction between Private School and Government Aided School teachers.

Table 1
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Type of School	Level of Job Satisfaction		Total
	High	Low	
Private Schools	25 (33.3%)	50 (66.7%)	75 (100%)
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Table 1 show that out of 75 teachers from Private Schools, 25 are feeling high job satisfaction and 50 are feeling low job satisfaction. But in the case of Government Aided School teachers, out of 75 respondents 37 are feeling high job satisfaction and 38 are feeling low job satisfaction. The chi-square test reveals that there is no association between level of job satisfaction and type of schools.

Gender and Level of Job Satisfaction

        An attempt is made to analyze the level of satisfaction on the basis of gender and the result is presented in the following Table 2. The hypothesis framed as "there is no association between gender and the level of job satisfaction in school teachers".

Table 2
Gender and Level of Job Satisfaction

Gender	Level of Job Satisfaction		Total
	High	Low	
Male	29	31	60
Female	33	57	90
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        It is clear from Table 2 that out of 60 male teachers 29 are feeling high job satisfaction and out of 90 female teachers 33 are feeling high job satisfaction. Hence, it is concluded that the male teachers are always highly job satisfied than the female teachers. The calculated value is less than the table value. Hence, the hypothesis is accepted. The chi-square test indicates that there is no relationship between gender and level of job satisfaction.

Age and Level of Job Satisfaction

        In the present study, there were teachers in different age groups. Hence, the researcher feels that it is appropriate to consider age as one of the deciding factors of the level of job satisfaction.   The nature of relationship between age of a teacher and level of job satisfaction is discussed in Table 3. The hypothesis framed as "there is no significant association between age and level of job satisfaction".

Table 3
Relationship between Age and Level of Satisfaction

Age Level	Level of Job Satisfaction		Total
	High	Low	
Below 25 Years	12	48	60
25 to 35 Years	21	19	40
35 to 45 Years	17	8	25
Above 45 Years	12	13	25
Total	62	88	150

Calculated Value of Chi-squre = 21.10

        Table 3 reveals that out of 60 teachers with age below 25 years, 12 are feeling high job satisfaction and 48 are felt low. In the next 25 to 35 age group, 21 teachers are highly satisfied out of total of 40. Out of 25 respondents in the age group '35 to 45 years', 17 are highly satisfied. In the age group 'above 45 years', majority respondents, i.e. 13 respondents, have low satisfaction level. Through the chi-square test result it is inferred that job satisfaction is not a dependent factor of age.

Education and Level of Job Satisfaction

        It is unavoidable to study the effect of qualification on the level of job satisfaction. A qualification used in the study refers to educational qualification possessed by the teacher at the time of taking this research. The qualification and job satisfaction were related by using the hypothesis as "there is no significant difference between educational qualification and level of job satisfaction".

Table 4
Education and Level of Job Satisfaction

Education	Level of Job Satisfaction		Total
	High	Low	
Graduate	5	15	20
Post Graduate	8	10	18
Teacher Training Course	32	33	65
B.Ed.	17	30	47
Total	62	88	150

Calculated Value of Chi-squre = 20.27

        Table 4 shows that out of 150 respondents, 65 respondents have studied teacher training courses. Of them, 33 have low level of satisfaction. Among the 47 B.Ed. degree holders, 30 respondents feel low satisfaction in their job. It is inferred from the Table 4 that majority of respondents feels low satisfaction in their job. The chi-square test based on this table also proves that there is significant dependence between level of job satisfaction and educational qualification.

Marital Status and Level of Job Satisfaction

The variable marital status is considered as one of the factor for considering the level of satisfaction. The researcher has analysed the marital status and job satisfaction level by setting the hypothesis as "there is no significant relationship between marital status and job satisfaction of school teachers".

Table 5
Marital Status and Level of Job Satisfaction

Marital Status	Level of Job Satisfaction		Total
	High	Low	
Married	45	25	70
Unmarried	17	63	80
Total	62	88	150

Calculated Value of Chi-squre = 30.49

Table 5 reveals that out of 70 married teachers, 45 are feeling high job satisfaction, and 25 are feeling low job satisfaction. Out of 80 unmarried teachers, 63 have low job satisfaction and 17 having high job satisfaction. It is inferred from the study that married respondents have high level of satisfaction on their job. It is also proved from the chi-square test that there is relationship between marital status and level of job satisfaction.

Income and Level of Job satisfaction

The researcher has made an attempt to analyse the level of job satisfaction based on the income of the teacher, because income is considered as one of the important variable. The hypothesis set for this variable is "there is no significant relationship between income and level of job satisfaction".

Table 6
Iincome and Level of Job Satisfaction

Income	Level of Job Satisfaction		Total
	High	Low	
Less than Rs.10,000	6	23	29
Rs.10,000 to Rs.15,000	7	11	18
Rs.15,000 to Rs.20,000	26	14	40
Above Rs.20,000	23	40	63
Total	62	88	150

Calculated Value of Chi-square = 58.49

It is evident from Table 6 that out of 29 respondents in 'less than Rs.10000' income category, 6 are feeling high job satisfaction and 23 are feeling low satisfaction. In the 'above Rs.20,000' income category, majority of respondents, i.e. 40 respondents out of 63, have low level of satisfaction. Table 6 shows that a majority of respondents have high level satisfaction in the income category of Rs.15000 to Rs.20000. The framed hypothesis is rejected and hence it is concluded that there is relationship between Income and level of job satisfaction.

Family Size and Level of Job Satisfaction

Table 7 shows the relationship between family size and level of job satisfaction. The following hypothesis is framed for this purpose, i.e. "there is no association between size of the family and level of job satisfaction of the school teachers".

Table 7
Family Size and Level of Job Satisfaction

Family Size	Level of Job Satisfaction		Total
	High	Low	
Upto 2 Members	31	51	82
3 to 4 Members	14	10	24
5 to 6 Members	13	13	26
Above 6 Members	4	14	18
Total	62	88	150

Calculated Value of Chi-square = 5.70

It is clear from the Table 7 that majoriy of teachers have low level of job satisfaction which is evident from the family size of 'upto 2 members' and 'above 6 members'. Only 14 respondents out of 24 have high level of job satisfaction. As the calculated value of greater than the table value at 5% level, the hypothesis is rejected. It concludes from the above information that family size of the teachers' influences the level of job satisfaction.

Nature of Family and Level of Job Satisfaction

Table 8 shows the relationship between nature of family and level of job satisfaction. The hypothesis framed for this is as "there is no association between nature of family and level of job satisfaction".

Table 8
Nature of Family and Level of Job Satisfaction

Nature of family	Level of Job Satisfaction		Total
	High	Low	
Joint	29	26	55
Individual	33	62	95
Total	62	88	150

Calculated Value of Chi-square = 6.93

Table 8 reveals that out of 150 teachers, 55 are in joint family nature and 95 teachers family type is individual type. Majority of joint family members opines that the level of job satisfaction is high than the individual family category. The chi-square test indicates that there is relationship between family size and level of job satisfaction.

Experience and Level of Job Satisfaction

There is an absolute controversy prevails among the authors in the field of personal management and among different researchers ventured in this area regarding the experience of the employees and their job satisfaction. Based on this fact, the researcher is interested to study the relationship between experience and level of job satisfaction for which the hypothesis framed is as "there is an independent relationship between experience and level of job satisfaction".

Table 9
Experiene and Level of Job Satisfaction

Experience	Level of Job Satisfaction		Total
	High	Low	
Below 5 Years	27	45	72
5 to 10 Years	19	15	34
11 to 15 Years	10	26	36
Above 15 Years	6	2	8
Total	62	88	150

Calculated Value of Chi-square = 19.26

It is evident from Table 9 that out of 72 respondents who are having 'below 5 years' experience, a major portion of respondents have low level of satisfaction. It is also depicted in '11 to 15 years' experience category. Only a minimum portion of respondents have high level of satisfaction which is evidenced in '5 to 10 years' and 'above 15 years' experience categories. It is inferred from above information that the above hypothesis is rejected. Hence, there is a relationship between experience and level of job satisfaction.

MAJOR FINDINGS

1. It is evident from the study that the male teachers are highly satisfied thatn the female teachers.
2. The study shows that the teachers in 25 to 45 years age group have high level satisfaction than the other age groups.
3. In this study, most of the teachers having teachers training course and B.Ed. degree course have low level of satisfaction.
4. It is inferred from the study that married respondents have high level of satisfaction on their job.
5. It is clear that a major portion of respondents falls in 'less than Rs.10,000' and 'above s.20,000' income category and they have low level of satisfaction in their job.
6. It is clear that majoriy of teachers have low level of job satisfaction which is evident from the family size of 'upto 2 members' and 'above 6 members'.
7. Majority of joint family members opines that the level of job satisfaction is high than the individual family category.
8. A major portion of respondents have low level of satisfaction which is evidenced in 'below 5 years' and '11 to 15 years' experience category.

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THE DOMINANCE OF E-COMMERCE: HOW ONLINE SHOPPING REVOLUTIONIZES THE RETAIL INDUSTRY

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ABSTRACT

The rise of e-commerce has brought about a revolutionary change in the retail industry, transforming the way consumers shop for products. This article explores the dominance of e-commerce and its transformative effects on traditional brick-and-mortar retailers. The study aims to analyze the impact of e-commerce on traditional retailers and identify the key factors contributing to the success of e-commerce in the retail sector. The study adopts a descriptive research design using a survey approach, incorporating both secondary and primary sources of data. A sample of 50 retailers, including both traditional and e-commerce businesses, was selected in Madurai city using a simple random sampling method. Based on the results, it can be suggested that convenience, product selection, competitive pricing, and technological innovation may not be the key factors driving the dominance of e-commerce in the retail industry. However, it is important to note that these findings are specific to the context and time period analyzed in this study. To adapt to the dominance of e-commerce, traditional retailers are advised to embrace omnichannel strategies, invest in online platforms and digital marketing, and prioritize customer experience and personalized services. By understanding and leveraging the advantages of e-commerce, traditional retailers can thrive in the evolving retail landscape. In conclusion, e-commerce has emerged as a dominant force in the retail industry, revolutionizing consumer behaviour and posing challenges to traditional retailers. This study provides insights into the growth and impact of e-commerce, highlighting the factors contributing to its dominance. Traditional retailers must strategically adapt and embrace e-commerce to ensure their long-term success in the digital age.

KEYWORDS: E-commerce, online shopping, retail industry, brick-and-mortar retailers, dominance, consumer behaviour, market dynamics, impact, factors, omnichannel strategies.

INTRODUCTION

In today's digital era, the retail industry is experiencing a significant transformation with the rise of e-commerce. The advent of online shopping has revolutionized the way consumers purchase products, and it has had a profound impact on traditional brick-and-mortar retail businesses. This article aims to explore the dominance of e-commerce and its transformative effects on the retail industry.

STATEMENT OF THE PROBLEM

The rapid growth of e-commerce has posed challenges for traditional retail businesses, forcing them to adapt to the changing consumer behavior and market dynamics. The problem lies in understanding the extent of e-commerce's dominance and its implications for traditional retailers.

SCOPE AND NEED OF THE STUDY

This study will focus on analysing the dominance of e-commerce in the retail industry, examining its impact on traditional retail businesses, and identifying the factors contributing to its success. The need for this study arises from the growing importance of e-commerce as a major retail channel and the necessity for retailers to understand and adapt to this changing landscape.

OBJECTIVES

1. To understand the impact of e-commerce on traditional brick-and-mortar retailers.

2. To identify the key factors contributing to the dominance of e-commerce in the retail sector.

METHODOLOGY

The descriptive research design was employed through survey approach. Both secondary and primary sources of data used in this study. The sample was collected from retailers using traditional and e commerce were selected in Madurai city totally 50 samples collected using simple random sampling method.

HYPOTHESES

Hypothesis 1: There is no significant difference between traditional brick and mortar Retailers and business practice

Hypothesis 2: There is no significant relationship between Factors contribute to the dominance of e-commerce in the retail industry and Business practice.

TABLE 1: IMPACT OF E-COMMERCE ON TRADITIONAL BRICK-AND-MORTAR RETAILERS

S. No.	Impact of e-commerce on traditional brick-and-mortar retailers.	Test	Mean Square	F	Sig.	Result
1	Sales Performance	Between Groups	.398	.473	.601	p > 0.601 NS
		Within Groups	.841			
2	Foot Traffic	Between Groups	.395	.428	.533	p > 0.533 NS
		Within Groups	.923			
3	Customer behaviour	Between Groups	.884	.806	.391	p >0. 391 NS
		Within Groups	1.097			
4	Store Closures/expansion	Between Groups	.626	.635	.393	p > 0.393 NS
		Within Groups	.986			

The interpretation of the impact of e-commerce on traditional brick-and-mortar retailers based on the analysis of the variables is as follows:

Sales Performance: The analysis indicates that there is no significant difference in sales performance between traditional retailers and e-commerce platforms (p > 0.601). This suggests that e-commerce has not had a significant negative impact on the sales performance of brick-and-mortar retailers.

Foot Traffic: The analysis shows no significant difference in foot traffic between traditional retailers and e-commerce platforms (p > 0.533). This implies that e-commerce has not significantly affected the number of customers visiting physical stores.

Customer Behaviour: The analysis reveals no significant difference in customer behaviour between traditional retailers and e-commerce platforms (p > 0.391). This suggests that e-commerce has not led to significant changes in consumer purchasing patterns or preferences.

Store Closures/Expansion: The analysis indicates no significant difference in store closures or expansions between traditional retailers and e-commerce platforms (p > 0.393). This implies that e-

commerce has not played a significant role in influencing the physical presence or growth strategies of brick-and-mortar retailers.

Overall, the non-significant results (NS) across all variables suggest that the impact of e-commerce on traditional brick-and-mortar retailers, as measured by the variables analyzed, is not statistically significant. It implies that e-commerce may not have had a substantial negative impact on the sales performance, foot traffic, customer behaviour, or store closures/expansion of traditional retailers in this study. However, it's important to consider that these results may be specific to the particular context and time period analyzed, and further research may be needed to draw more conclusive findings.

TABLE 2: FACTORS -DOMINANCE OF E-COMMERCE IN THE RETAIL INDUSTRY

S. No.	Factors -dominance of e-commerce in the retail industry	Test	Mean Square	F	Sig.	SI
1	Convenience	Between Groups	0.779	0.811	0.389	p > 0.389
		Within Groups 0.961				**NS**
2	Product selection	Between Groups	0.954	1.075	0.259	p > 0.259
		Within Groups 0.887				**NS**
3	Competitive pricing	Between Groups	0.488	0.504	0.780	p > 0.780
		Within Groups 0.968				**NS**
4	Technology innovation	Between Groups	0.671	0.735	0.431	p > 0.431
		Within Groups 0.912				**NS**

he interpretation of the analysis on the factors contributing to the dominance of e-commerce in the retail industry is as follows:

Convenience: The analysis shows no significant difference in convenience between e-commerce platforms and traditional retail (p > 0.389). This suggests that convenience is not a statistically significant factor contributing to the dominance of e-commerce in the retail industry, based on the variables analyzed.

Product Selection: The analysis indicates no significant difference in product selection between e-commerce platforms and traditional retail (p > 0.259). This implies that product selection is not a statistically significant factor influencing the dominance of e-commerce in the retail industry, based on the variables analyzed.

Competitive Pricing: The analysis reveals no significant difference in competitive pricing between e-commerce platforms and traditional retail (p > 0.780). This suggests that competitive pricing is not a statistically significant factor contributing to the dominance of e-commerce in the retail industry, based on the variables analyzed.

Technological Innovation: The analysis shows no significant difference in technological innovation between e-commerce platforms and traditional retail (p > 0.431). This implies that technological innovation is not a statistically significant factor influencing the dominance of e-commerce in the retail industry, based on the variables analyzed.

Overall, the non-significant results (NS) across all factors suggest that convenience, product selection, competitive pricing, and technological innovation are not statistically significant factors contributing to the dominance of e-commerce in the retail industry, based on the variables analyzed in this study.

However, it's important to consider that these results may be specific to the particular context and time period analyzed, and further research may be needed to draw more conclusive findings.

SUGGESTIONS

1. Based on the findings of this study, several suggestions can be made for traditional retailers to adapt to the dominance of e-commerce:

2. Embrace omnichannel strategies by integrating online and offline shopping experiences.

3. Invest in robust online platforms and digital marketing to attract and retain customers.

4. Focus on customer experience and personalized services to differentiate from e-commerce competitors.

CONCLUSION

E-commerce has emerged as a dominant force in the retail industry, reshaping consumer behaviour and challenging traditional retailers. This study sheds light on the growth and impact of e-commerce, identifying key factors contributing to its dominance. By understanding these dynamics, traditional retailers can strategically adapt and thrive in the evolving retail landscape. Embracing e-commerce and leveraging its advantages will be crucial for the long-term success of retail businesses in the digital age.

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A Study on Consumers Perceived Risk in Online Shopping in Madurai City

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Abstract
Utilizing the internet as a marketing platform has become increasingly popular among companies, presenting an unconventional avenue for reaching consumers. Perceived risk serves as a crucial indicator in comprehending consumer behavior, as individuals are often more driven to evade potential losses than to maximize successful purchases. This underscores the significance of understanding consumers' perceived risk, particularly for managerial decision-making. Online shopping, characterized by its convenience and the expansive product offerings at one's fingertips, has become a prevalent method of commerce. Mobile commerce (m-commerce) extends this convenience, referring to purchases made through an online retailer's mobile-optimized site or app. Additionally, when businesses engage in online transactions with other businesses, it falls under the category of business-to-business (B2B) online shopping. This study, conducted in Madurai City, involves the collection of 50 samples to examine consumers' perceived risk in online shopping. The primary objectives include identifying various categories of perceived risks, analyzing the diverse risks associated with online shopping, and understanding consumers' risk perceptions in this context. The analysis of perceived risk contributes to enhancing marketing efficiency, underscoring the pivotal importance of studying consumers' perceived risk in the realm of online shopping.
Keywords: Online Shopping, Perceived Risk, Marketing Efficiency, Purchasing Decision, Financial Risk

Introduction

In an era marked by heightened global interconnectedness, marketers are presented with unprecedented opportunities. The rapid integration of the world economies has prompted businesses to embrace the internet as a cost-effective avenue for conducting marketing activities. Amid this digital transformation, online shopping has emerged as a dynamic and expanding facet of technology. Establishing an online store empowers retailers to broaden their market, connecting with consumers who might not frequent physical stores. This paradigm shift, referred to as business-to-consumer (B2C) online shopping, involves consumers directly purchasing goods and services from sellers over the internet using web browsers.

Statement of the Problem

In our modern world, the relentless pace of life has led people to turn to online shopping for its convenience. India, positioned as the third-largest internet user globally, boasts over 121 million internet users, with a significant portion opting for online purchases. As online shopping gains popularity, it becomes imperative to delve into consumers' perceived risks, especially in the context of Madurai City. Recognizing consumers' perceived risks in online shopping is crucial within the marketing landscape.

Objectives of the Study

• Identify various types of consumers' perceived risks in online shopping.
• Analyze the diverse risks associated with online shopping.
• Understand consumers' risk perception towards online shopping.
• Gain insights into consumers' behaviour in the realm of online shopping.

Significance of the Study

This study holds managerial significance by illuminating the importance of understanding consumers' risk perception and associated risks in the realm of internet shopping. For marketers, awareness of risk perception attributes is pivotal, as consumers' perceived risk levels play a decisive role in internet purchasing. This analysis enhances marketing efficiency, underscoring the crucial importance of studying consumers' perceived risks in online shopping.

Research Methodology

Research methodology serves as a systematic approach to solving research problems. In this study, the research design, data sources, and statistical tools are outlined.

Sample Design

The study utilizes a sample design, a defined plan for extracting a sample from a given population.

Sample Method

Convenience sampling is employed to draw a sample, with a total sample size of 50 participants.

Area of the Study

The study focuses on online shopping customers in Madurai City.

Sources of Data

Primary data, collected through a Likert scale questionnaire, provide firsthand information. Secondary data are derived from journals, magazines, academic books, and internet sources.

Statistical Tools Used

The study employs percentage analysis, ranking methods, and a five-point Likert scale for comprehensive analysis.

Limitations of the Study

• The study's exclusion of certain variables related to internet perceived risk.
• The small sample size and localized respondents may limit the study's representativeness.
• The study's time constraints restrict a more comprehensive examination.
• The time period for the study is limited to conduct a comprehensive study.

Data Analysis and Interpretation

Table 1 Reasons for Online Shopping

Reason	No. of respondents	Percentage
Door step delivery	5	10
Low price	7	14
Time saving	14	28
Wide variety of brand choice	2	4
Getting latest product	12	24
Convenience	10	20
Total	50	100

Source: Primary Data

Interpretation

The table indicates that the primary motivator for online shopping is time-saving, with 28% of customers preferring it for this reason. Following closely, 24% opt for online shopping to access the latest products, while 14% cite low prices as a driving factor.

Ranking Method

Table 2 Ranking on the Basis of the Grand Mean Score of Different Perceived Risk

No	Risk	Mean	Rank
1	Financial Risk	12.06	1
2	Product Risk	11.38	3
3	Time/Convenience Risk	12.04	2
4	Delivery Risk	11.22	4

Source: Primary Data

Interpretation

Financial risk emerges as the most significant concern for online shoppers, with a grand mean score of 12.06, ranking first. Time/convenience risk follows closely as the second most important, while product risk is the third. Delivery risk is perceived as the least significant problem.

Online Shopping Experience

Table 3 Ranking on the Basis of the Grand Mean Score of Different Perceived Risk

No. of respondents		Percentage	Cumulative
Highly satisfied	21	42	42
Satisfied	11	22	64
Average	8	16	80
Dissatisfied	5	10	90
Highly dissatisfied	5	10	100
Total	50	100	

Source: Primary Data

Interpretation

The table illustrates that 42% of users are highly satisfied with their online shopping experience. However, 10% express dissatisfaction, indicating room for improvement.

Table 4 Showing the Overall Delivery Risk

Valid	Receiving Wrong Products	Good Arriving Damaged	Non Delivery	Send to the Wrong Place	Total	%
Strongly Agree	2	1	5	1	9	4.5
Agree	7	8	8	5	28	14
Neutral	20	5	21	19	65	32.5
Disagree	10	23	10	14	57	28.5
Strongly Disagree	11	13	6	11	41	20.5
Total	50	50	50	50	200	100

Source: Primary Data

Interpretation

32.5% of respondents are neutral about delivery risks, while 28.5% disagree. This suggests that, overall, delivery risk is relatively low in the context of online shopping.

Findings of the Study

- The primary motivators for online shopping are time-saving and access to the latest products.
- Financial risk is identified as the most significant concern, followed by time/convenience risk, while delivery risk is perceived as the least critical.
- 42% of users express high satisfaction with their online shopping experience.
- Overall, delivery risk appears to be low, with the majority of respondents expressing neutral or disagreeing views.

Suggestions

- Ensure the supply of quality products online.
- Provide after-sale services, such as guarantees and warranties.
- Timely delivery is crucial for customer satisfaction.
- Provide accurate and continuous product information.
- Enhance security measures for credit card information.
- Focus on delivering good services to build a positive online shopping experience.
- Consider implementing a money-back guarantee for faulty products.

Conclusion

This study emphasizes the perceived risks in online shopping, highlighting the importance of addressing financial and time/convenience risks. It concludes that young consumers are more susceptible to online marketing, and products catering to standardized and trendy preferences are in high demand. The identified dimensions of consumers' perceived risk-financial, product, time/convenience, and delivery-underscore the complex landscape of online shopping. While financial risk emerges as a primary concern, the study emphasizes the need for targeted strategies to mitigate these risks and enhance the overall online shopping experience.

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PREFERENCE OF DIFFERENT TYPES OF GOLD ORNAMENTS BY WOMEN BUYERS

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ABSTRACT

The Indian market is well known for its diversity and marketers here are engaged in marketing a host of products and product variants in order to cater to the large consumer tastes differences that can be categorized regionally and religiously. Gold is a formidable part of showcasing the Indian customs and traditions. The culture celebrates many religious festivals and occasions such as weddings when gold is worn as part of the colourful and lavish outfits. Customers are now want worth for money as gold rates are heading north. Gold was just a safe investment for small-town people. They used to buy heavy jewellery during the marriage season. But now they also look for genuine, trendy and designer jewellery. It is equally important to understand what compels the consumer to actually make a purchase, as opposed to just generating interest. Some consumers respond based on how they are feeling, or more emotionally, while some are focused on making the wisest economic decision. This study focus attention on the preference of gold ornaments by women buyers.

KEY WORDS
Consumer Behaviour, Gold, Invesment, Jewellery, Ornaments, Preference, and Women Buyers

INTRODUCTION

Consumer behaviour essentially refers to how and why people make the purchase decisions they do. Marketers strive to understand this behaviour so they can better formulate appropriate marketing stimuli that will result in increased sales and brand loyalty. There are a vast number of goods available for purchase, but consumers tend to attribute this volume to the industrial world's massive production capacity. Rather, the giant known as the marketing profession is responsible for the variety of goods on the markets. The science of evaluating and influencing consumer behaviour is foremost in determining which marketing efforts will be used and when.

While all of this information might be helpful to marketers, it is equally important to understand what compels the consumer to actually make a purchase, as opposed to just generating interest. For example, some consumers respond based on how they are feeling, or more emotionally, while some are focused on making the wisest economic decision. Knowing the different elements that stimulate consumer purchase activity can help marketers design appropriate sales techniques and responses.

People are not likely to take as much time doing brand comparisons of mouthwash as they are for a new car or gold ornament. The importance of the purchase, as well as the risk involved, adds to how much time and effort will be spent evaluating the merits of each product or service under consideration. In cases of importance such as the purchase of a car or gold ornament, consumers are more likely to use rational, attribute-based comparisons, in order to make the most informed decision possible.

Gold is a formidable part of showcasing the Indian customs and traditions. The culture celebrates many religious festivals and occasions such as weddings when gold is worn as part of the colourful and lavish outfits. Giving gold as gift is also very common. Indian market is lavish with varied designs and offerings. Brand management holds the key in the contemporary markets, particularly in Indian markets because Indians are very traditional. Customers are now want worth for money as gold rates are heading north. Gold was just a safe investment for small-town people. They used to buy heavy jewellery during the marriage season. But now they also look for genuine, trendy and designer jewellery. This is evident in their offerings, collection and merchandising campaigns. This attracted the researcher to conduct a study on the preference of gold ornaments by women buyers.

LITERATURE REVIEW

The authors made an attempt to review the studies carried out by various researchers on the buying behaviour of women towards gold ornaments. While reviewing, few studies relating to buying behaviour of women have been found and listed below and these studies are not related to gold ornaments.

Piyush Kumar Sinha, Arindam Banerjee and Dwarika Prasad Uniyal (2002) in their article stated that the primary reasons for choosing a store are convenience and merchandise, store ambience and service being other reasons. Shoppers could minimize the effort of shopping by reducing either the travel time or time spent in the shop. The gender and age of shoppers drive the choice of store. Monthly household income did come out as a significant factor but it was reflected more in terms of the type of products bought. Men respondents have given more prominence to proximity. Ambience and facilities are more important in cases where the shoppers spend more time within the store. Rajashkar, B. and A. Shankaraiah (2003) have conducted a study on problems of consumers. It reveals that the nature of problems among the consumers varied from place to place and degree of intensities linked with the awareness level of individual consumers. The female respondents experience maximum number of problems regarding duplicates in essential items, adulteration and underweight. Education levels are directly linked to problems relating to lack of manufacturing date and expiry date and this problem affects overall consumer segments. Lokhande, M.A. (2006) in an article has made an attempt to probe into the awareness of the consumers in Jalna City, their reactions regarding service-providing agencies and have made some suggestions. This study throws adequate light on the indifferent attitude of consumers and also highlights the degree of unawareness among the consumers. Consumers are also cheated in one or other form in spite of consumer protection measures. The suggestion offered by the study includes that it is the need of the hour to implement the acts strictly and the culprits must be punished. Alok Kala (2010) pointed out that gems and jewellery are in great demand in India and worldwide. Jaipur exports a wide collection of gold, platinum and studded jewellery. It also has an Export Promotion Industrial Park (EPIP) at Sitapura. Johari Bazar, M.I. Road is the famous Jewellery Markets of Jaipur, for buying Jewellery. He opines that various new ventures like Gold Souk, 200 expected jewellery factories in Special Economic Zone and 50 jewellery plants coming up at Export Promotion Industrial Park have consolidated trade in a more organized form. He said that the jewellery market in Sitapur alone accounts for turnover of Rs 450 crore, which includes Rs 300 crore of the exports. Jain (2012) in a study analyzed the performance and growth rate of Gems and Jewellery Industry in India for the period from 2006 to 2011. Deepa, S. and Natarajan, M. (2013) pointed out that people use gold for coins, jewellery, ornaments and many industrial purposes. Women's are passionate about jewellery as it represented a symbol of feminity and even social status. This research paper analyzes about the customer's attitude and behaviour on jewellery purchase. Survey method has been used to collect the primary data through a well designed questionnaire from the various taluks of Salem District. The results were compared and analyzed by using descriptive analysis, average score analysis, chi-square analysis, analysis of variance and multiple regression. Geiger-Oneto, Gelb, Walker and Hess (2013) in their study examined the choice that the consumers make between the luxury brand and non-luxury brands and the counterfeits. The study also investigated how the choice is structured in the consumers mind. Asha, K. and Edmund Christopher, S. (2014) in their research article stated that gold is considered as a glamorous metal and as a symbol of status among people. This study seeks which factors that determinant the behaviour of consumers towards branded and non-branded jewellery products. There seen larger brands witnessing an upward activity mainly due to factors such as increasing consumer false belief, decreasing investment compulsive purchases, fascinating retail channels and competition from other expensiveness products. The analyses showed that consumers are reasonably aware of the branded players who have forayed into the jewellery market. Rajani, P. (2018) in an article titled "Consumer Buying Behaviour towards Gold Jewellery with special reference to Kottayi Panchayath, Palakkad District" throws light on consumer behavior\ur pattern in purchasing gold jewellery.

The above reviews indicate that a research has not been conducted among women towards buying preference with special reference to gold ornaments. The present study is expected to fill this research gap by adding inputs to the growing body of knowledge.

STATEMENT OF THE PROBLEM

From ancient times people all over the world have shown special interest in gold ornaments either for possession or prestige or status. The same trend is continued, rather it is high. It is understood that gold is inseparable from India's culture and art. It is a fact that gold in one form or other is used in all temples, places of worship and sacred areas. When there are alternative investments available to consumers why they prefer buying jewels, will be of more useful information to anybody. In this way it becomes important for the merchants to know the changing preferences of customers. As gold is preferred for all occasions, it is viewed that there is still more scope for this business. Jewellery is a very vast field to study upon because for every culture and religion have different style of jewellery. This gave the idea to the researcher to study the preferences of different types of gold ornaments by women.

OBJECTIVE OF THE STUDY

The main objectives of the study is analyse the buying behaviour of women towards different types gold ornaments in Madurai District.

METHODOLOGY

Madurai District is second largest population of the State of Tamil Nadu. The hidden wonder is that Madurai is the only place in Asia where around 1,500 jewellery showrooms exist in a single street. Hence, the study is confined to Madurai District only. Data collection methods are an integral part of research design. Both primary data and secondary data are used in this research. Secondary data have been collected from the World Gold Council Reports, journals, newspapers, theses, and magazines. Various websites have also been referred to for the purpose of collecting secondary data.

An interview schedule was used to collect the primary data to answer the research questions with reference to buying behaviour of women towards different types of gold ornaments. The time and cost constraints and difficulty to access to the potential respondents in Madurai District caused the researcher to use the non-probability method of convenience sampling. The survey was conducted generally via face-to-face interviews. A total of 400 interview schedules were distributed to the women consumers who buy gold ornaments in Madurai District at the various jewellery showrooms. After having done the appropriate screening process, eight interview schedules were considered as unusable and the rest 392 responses were used which were

considered as complete and valid for final analysis. Semantic Differential scale with seven points has been used to gauge the women buyers' preference towards buying of different types of gold ornaments.

ANALYSIS AND INTERPRETATION

PREFERENCE OF DIFFERENT TYPES OF GOLD ORNAMENTS BY SAMPLE WOMEN BUYERS

The most valuable asset for a business is the customers. Building and fostering customer relationship assumes greater significance in a competitive world. Consumer or buyer preference is central to many marketing situations; preference is an important aspect of consumer attitude. Since buyer preference and behaviour link have certain empirical support for several marketing situations, marketers attempt to measure the extent of buyer preference by using scaling technique which may be either a single item scale or multiple item scale.

For analysis, Semantic Differential (SD) scale with seven points has been used to gauge the women buyers' preference towards buying of different types of gold ornaments in Madurai district. In the Semantic Differential scale, polar opposites namely, least preferred at the one pole / end with the score of 1, and at the other end of the pole most preferred with the score of 7 points and in between these two extremes, namely, for the intermediate points, 2 to 6 scores were incorporated. This Semantic Differential scale is an adaptation of Osgood Scale with 7 positions.

The researcher made use of this Semantic Differential scale in order to find out the respondents ranking of their most preferred gold ornaments (among seven types of gold ornaments). The specimen of the Semantic Differential scale used on this point is shown in Table 1.

TABLE – 1
Semantic Differential Scale for Women Buyers' Preference for Buying Different Types of Gold Ornaments

Types of Gold Ornaments	Ranks by Sample Buyers						
	Least Preferred						Most Preferred
	1	2	3	4	5	6	7
Hairpin	79	219	44	29	9	7	5
Necklace	13	9	41	73	198	34	24
Bracelet	32	51	183	66	41	12	7
Bangle	11	4	8	7	38	262	62
Ring	5	11	91	202	69	5	9
Chain	9	6	4	11	29	47	286
Anklet	226	67	32	29	17	14	7

The above Table 1 shows the ranking of preferred types of gold ornaments by the sample women buyers in Madurai district. It gives an overall view of all the seven types of gold ornaments. Each of the 392 respondents was requested to mark the position (1 to 7) for the seven types of gold ornaments in the order of their preference. The respondents' marking of their position from 1 to 7 for the seven types of gold ornaments and the weighted average are given in Tables 2 to 8.

The following Table 2 shows the respondents' marking of their position from 1 to 7 for the gold ornament 'Hairpin'.

TABLE – 2
Women Buyers' Rating for the Gold Ornament 'Hairpin'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	79	20.15	79	0.20
2	219	55.87	438	1.12
3	44	11.21	132	0.34
4	29	7.40	116	0.30
5	9	2.30	45	0.11
6	7	1.79	42	0.11
7 (Most Preferred)	5	1.28	35	0.09
Total	**392**	**100.00**	**887**	**2.26**

Table 2 indicates that the gold ornament 'Hairpin' has obtained a total score of 887 and the weighted average is 2.26 based on the ratings of buyers. It indicates that less preference is seen in buying of Hairpin.

The respondents' marking of their position from 1 to 7 for the gold ornament 'Necklace' is depicted in Table 3.

TABLE – 3
Women Buyers' Rating for the Gold Ornament 'Necklace'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	13	3.32	13	0.03

2	9	2.30	18	0.05
3	41	10.46	123	0.31
4	73	18.62	292	0.74
5	198	50.51	990	2.53
6	34	8.67	204	0.52
7 (Most Preferred)	24	6.12	168	0.43
Total	**392**	**100.00**	**1808**	**4.61**

The buyers rating for the gold ornament 'Necklace' is computed in Table 3. It depicts that it has scored a total score of 1808 and a mean score of 4.61. It is evidenced that the ornament 'Necklace' is most preferred by women.

Table 4 displays the respondents' marking of their position from 1 to 7 for the gold ornament 'Bracelet' and its weighted average score.

TABLE – 4
Women Buyers' Rating for the Gold Ornament 'Bracelet'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	32	8.16	32	0.08
2	51	13.01	102	0.26
3	183	46.68	549	1.40
4	66	16.84	264	0.67
5	41	10.46	205	0.52
6	12	3.06	72	0.18
7 (Most Preferred)	7	1.79	49	0.13
Total	**392**	**100.00**	**1273**	**3.25**

It is observed from Table 4 that the calculated rating for the gold ornament 'Bracelet' was 1273 and the weighted average score is 3.25. It means that the women buyer gives more preference to buy this ornament.

The respondents' marking of their position from 1 to 7 for the gold ornament 'Bangle' is exhibited in Table 5.

TABLE – 5
Women Buyers' Rating for the Gold Ornament 'Bangle'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	11	2.81	11	0.03
2	4	1.02	8	0.02
3	8	2.04	24	0.06
4	7	1.78	28	0.07
5	38	9.69	190	0.48
6	262	66.84	1572	4.01
7 (Most Preferred)	62	15.82	434	1.11
Total	**392**	**100.00**	**2267**	**5.78**

The computed buyers rating for the gold ornament 'Bangle' is shown in Table 5 and it has obtained a total score of 2267. The mean score for preferring this gold ornament is 5.78. It indicates that more preference is given to buy this ornament.

Table 6 illustrates the respondents' marking of their position from 1 to 7 for the gold ornament 'Ring'.

TABLE – 6
Women Buyers' Rating for the Gold Ornament 'Ring'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	5	1.28	5	0.01
2	11	2.81	22	0.06
3	91	23.21	273	0.70
4	202	51.53	808	2.06
5	69	17.60	345	0.88
6	5	1.28	30	0.08
7 (Most Preferred)	9	2.30	63	0.16
Total	**392**	**100.00**	**1546**	**3.94**

It is understood from Table 6 that the calculated rating for the gold ornament 'Ring' was 1546 and the weighted average score for this gold ornament is 3.94. It indicates that more preference is given to this ornament by women.

The respondents' marking of their position from 1 to 7 for the gold ornament 'Chain' and the weighted average are given in Table 7.

TABLE – 7
Women Buyers' Rating for the Gold Ornament 'Chain'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	9	2.30	9	0.02
2	6	1.53	12	0.03
3	4	1.01	12	0.03
4	11	2.81	44	0.11
5	29	7.40	145	0.37
6	47	11.99	282	0.72
7 (Most Preferred)	286	72.96	2002	5.11
Total	**392**	**100.00**	**2506**	**6.39**

The women buyers' rating for the gold ornament 'Chain' is computed and it is exhibited in Table 7. This ornament has scored a total score of 2506 and the mean score for this gold ornament is 6.39. It infers that women buyer highly prefers this ornament.

Table 8 reveals the respondents' marking of their position from 1 to 7 for the gold ornament 'Anklet'.

TABLE – 8
Women Buyers' Rating for the Gold Ornament 'Anklet'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	226	57.65	226	0.58
2	67	17.09	134	0.34
3	32	8.16	96	0.24
4	29	7.40	116	0.30
5	17	4.34	85	0.22
6	14	3.57	84	0.21
7 (Most Preferred)	7	1.79	49	0.13
Total	**392**	**100.00**	**790**	**2.02**

It is observed from the Table 8 that the computed rating for the gold ornament 'Anklet' is 790 and the weighted average score is 2.02. This highlights that less preference is seen in buying this organment by women.

Based on the above analyses from Tables 2 to 8, the respondents' ranking for all the given seven preferred gold ornaments is presented in Table 9.

TABLE – 9
Women Buyers' Ranking for Different Types of Gold Ornaments

S. No.	Types of Gold Ornaments	Total Score	Mean Score	Rank
1	Hairpin	887	2.26	VI
2	Necklace	1808	4.61	III
3	Bracelet	1273	3.25	V
4	Bangle	2267	5.78	II
5	Ring	1546	3.94	IV
6	Chain	2506	6.39	I
7	Anklet	790	2.02	VII

It is inferred from Table 9 that the gold ornament 'Chain' has secured a high mean score of 6.39 among the seven types of gold ornaments. Hence, first rank is given to this gold ornament. Following this, the gold ornament 'Bangle' secured the second position. The third rank goes to 'Necklace' type gold ornament. The remaining ranks fourth, fifth, sixth and seventh is assigned to ring, bracelet, hairpin, and anklet type gold ornaments respectively.

Finally, based on the above weighted mean score for each set of polar opposites for each type of gold ornament, an evaluation was made. These summary measures were plotted on the scales such that the respondents' preference levels of the seven types of gold ornaments were shown in Fig.1.

FIG. 1
Ranking of Gold Ornaments Preferred by Women Buyers

	Hairpin	Necklace	Bracelet	Bangle	Ring	Chain	Anklet
Value	2.26	4.61	3.25	5.78	3.94	6.39	2.02
Rank	VI	III	V	II	IV	I	VII

FINDINGS

The result of the study indicates that the women buyers preferred the gold ornament 'Chain' as their first choice by obtaining a high mean score of 6.39 among the seven types of gold ornaments. Hence, first rank is given to this gold ornament. Next to this, they preferred 'Bangle" as their second choice and 'Necklace' as their third choice. Remaining ornaments are less preferred by them.

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ABSTRACT

The Indian market is well known for its diversity and marketers here are engaged in marketing a host of products and product variants in order to cater to the large consumer tastes differences that can be categorized regionally and religiously. Gold is a formidable part of showcasing the Indian customs and traditions. The culture celebrates many religious festivals and occasions such as weddings when gold is worn as part of the colourful and lavish outfits. Customers are now want worth for money as gold rates are heading north. Gold was just a safe investment for small-town people. They used to buy heavy jewellery during the marriage season. But now they also look for genuine, trendy and designer jewellery. It is equally important to understand what compels the consumer to actually make a purchase, as opposed to just generating interest. Some consumers respond based on how they are feeling, or more emotionally, while some are focused on making the wisest economic decision. This study focus attention on the preference of gold ornaments by women buyers.

KEY WORDS
Consumer Behaviour, Gold, Invesment, Jewellery, Ornaments, Preference, and Women Buyers

INTRODUCTION

Consumer behaviour essentially refers to how and why people make the purchase decisions they do. Marketers strive to understand this behaviour so they can better formulate appropriate marketing stimuli that will result in increased sales and brand loyalty. There are a vast number of goods available for purchase, but consumers tend to attribute this volume to the industrial world's massive production capacity. Rather, the giant known as the marketing profession is responsible for the variety of goods on the markets. The science of evaluating and influencing consumer behaviour is foremost in determining which marketing efforts will be used and when.

While all of this information might be helpful to marketers, it is equally important to understand what compels the consumer to actually make a purchase, as opposed to just generating interest. For example, some consumers respond based on how they are feeling, or more emotionally, while some are focused on making the wisest economic decision. Knowing the different elements that stimulate consumer purchase activity can help marketers design appropriate sales techniques and responses.

People are not likely to take as much time doing brand comparisons of mouthwash as they are for a new car or gold ornament. The importance of the purchase, as well as the risk involved, adds to how much time and effort will be spent evaluating the merits of each product or service under consideration. In cases of importance such as the purchase of a car or gold ornament, consumers are more likely to use rational, attribute-based comparisons, in order to make the most informed decision possible.

Gold is a formidable part of showcasing the Indian customs and traditions. The culture celebrates many religious festivals and occasions such as weddings when gold is worn as part of the colourful and lavish outfits. Giving gold as gift is also very common. Indian market is lavish with varied designs and offerings. Brand management holds the key in the contemporary markets, particularly in Indian markets because Indians are very traditional. Customers are now want worth for money as gold rates are heading north. Gold was just a safe investment for small-town people. They used to buy heavy jewellery during the marriage season. But now they also look for genuine, trendy and designer jewellery. This is evident in their offerings, collection and merchandising campaigns. This attracted the researcher to conduct a study on the preference of gold ornaments by women buyers.

LITERATURE REVIEW

The authors made an attempt to review the studies carried out by various researchers on the buying behaviour of women towards gold ornaments. While reviewing, few studies relating to buying behaviour of women have been found and listed below and these studies are not related to gold ornaments.

Piyush Kumar Sinha, Arindam Banerjee and Dwarika Prasad Uniyal (2002) in their article stated that the primary reasons for choosing a store are convenience and merchandise, store ambience and service being other reasons. Shoppers could minimize the effort of shopping by reducing either the travel time or time spent in the shop. The gender and age of shoppers drive the choice of store. Monthly household income did come out as a significant factor but it was reflected more in terms of the type of products bought. Men respondents have given more prominence to proximity. Ambience and facilities are more important in cases where the shoppers spend more time within the store. Rajashkar, B. and A. Shankaraiah (2003) have conducted a study on problems of consumers. It reveals that the nature of problems among the consumers varied from place to place and degree of intensities linked with the awareness level of individual consumers. The female respondents experience maximum number of problems regarding duplicates in essential items, adulteration and underweight. Education levels are directly linked to problems relating to lack of manufacturing date and expiry date and this problem affects overall consumer segments. Lokhande, M.A. (2006) in an article has made an attempt to probe into the awareness of the consumers in Jalna City, their reactions regarding service-providing agencies and have made some suggestions. This study throws adequate light on the indifferent attitude of consumers and also highlights the degree of unawareness among the consumers. Consumers are also cheated in one or other form in spite of consumer protection measures. The suggestion offered by the study includes that it is the need of the hour to implement the acts strictly and the culprits must be punished. Alok Kala (2010) pointed out that gems and jewellery are in great demand in India and worldwide. Jaipur exports a wide collection of gold, platinum and studded jewellery. It also has an Export Promotion Industrial Park (EPIP) at Sitapura. Johari Bazar, M.I. Road is the famous Jewellery Markets of Jaipur, for buying Jewellery. He opines that various new ventures like Gold Souk, 200 expected jewellery factories in Special Economic Zone and 50 jewellery plants coming up at Export Promotion Industrial Park have consolidated trade in a more organized form. He said that the jewellery market in Sitapur alone accounts for turnover of Rs 450 crore, which includes Rs 300 crore of the exports. Jain (2012) in a study analyzed the performance and growth rate of Gems and Jewellery Industry in India for the period from 2006 to 2011. Deepa, S. and Natarajan, M. (2013) pointed out that people use gold for coins, jewellery, ornaments and many industrial purposes. Women's are passionate about jewellery as it represented a symbol of feminity and even social status. This research paper analyzes about the customer's attitude and behaviour on jewellery purchase. Survey method has been used to collect the primary data through a well designed questionnaire from the various taluks of Salem District. The results were compared and analyzed by using descriptive analysis, average score analysis, chi-square analysis, analysis of variance and multiple regression. Geiger-Oneto, Gelb, Walker and Hess (2013) in their study examined the choice that the consumers make between the luxury brand and non-luxury brands and the counterfeits. The study also investigated how the choice is structured in the consumers mind. Asha, K. and Edmund Christopher, S. (2014) in their research article stated that gold is considered as a glamorous metal and as a symbol of status among people. This study seeks which factors that determinant the behaviour of consumers towards branded and non-branded jewellery products. There seen larger brands witnessing an upward activity mainly due to factors such as increasing consumer false belief, decreasing investment compulsive purchases, fascinating retail channels and competition from other expensiveness products. The analyses showed that consumers are reasonably aware of the branded players who have forayed into the jewellery market. Rajani, P. (2018) in an article titled "Consumer Buying Behaviour towards Gold Jewellery with special reference to Kottayi Panchayath, Palakkad District" throws light on consumer behavior\ur pattern in purchasing gold jewellery.

The above reviews indicate that a research has not been conducted among women towards buying preference with special reference to gold ornaments. The present study is expected to fill this research gap by adding inputs to the growing body of knowledge.

STATEMENT OF THE PROBLEM

From ancient times people all over the world have shown special interest in gold ornaments either for possession or prestige or status. The same trend is continued, rather it is high. It is understood that gold is inseparable from India's culture and art. It is a fact that gold in one form or other is used in all temples, places of worship and sacred areas. When there are alternative investments available to consumers why they prefer buying jewels, will be of more useful information to anybody. In this way it becomes important for the merchants to know the changing preferences of customers. As gold is preferred for all occasions, it is viewed that there is still more scope for this business. Jewellery is a very vast field to study upon because for every culture and religion have different style of jewellery. This gave the idea to the researcher to study the preferences of different types of gold ornaments by women.

OBJECTIVE OF THE STUDY

The main objectives of the study is analyse the buying behaviour of women towards different types gold ornaments in Madurai District.

METHODOLOGY

Madurai District is second largest population of the State of Tamil Nadu. The hidden wonder is that Madurai is the only place in Asia where around 1,500 jewellery showrooms exist in a single street. Hence, the study is confined to Madurai District only. Data collection methods are an integral part of research design. Both primary data and secondary data are used in this research. Secondary data have been collected from the World Gold Council Reports, journals, newspapers, theses, and magazines. Various websites have also been referred to for the purpose of collecting secondary data.

An interview schedule was used to collect the primary data to answer the research questions with reference to buying behaviour of women towards different types of gold ornaments. The time and cost constraints and difficulty to access to the potential respondents in Madurai District caused the researcher to use the non-probability method of convenience sampling. The survey was conducted generally via face-to-face interviews. A total of 400 interview schedules were distributed to the women consumers who buy gold ornaments in Madurai District at the various jewellery showrooms. After having done the appropriate screening process, eight interview schedules were considered as unusable and the rest 392 responses were used which were

considered as complete and valid for final analysis. Semantic Differential scale with seven points has been used to gauge the women buyers' preference towards buying of different types of gold ornaments.

ANALYSIS AND INTERPRETATION

PREFERENCE OF DIFFERENT TYPES OF GOLD ORNAMENTS BY SAMPLE WOMEN BUYERS

  The most valuable asset for a business is the customers. Building and fostering customer relationship assumes greater significance in a competitive world. Consumer or buyer preference is central to many marketing situations; preference is an important aspect of consumer attitude. Since buyer preference and behaviour link have certain empirical support for several marketing situations, marketers attempt to measure the extent of buyer preference by using scaling technique which may be either a single item scale or multiple item scale.

  For analysis, Semantic Differential (SD) scale with seven points has been used to gauge the women buyers' preference towards buying of different types of gold ornaments in Madurai district. In the Semantic Differential scale, polar opposites namely, least preferred at the one pole / end with the score of 1, and at the other end of the pole most preferred with the score of 7 points and in between these two extremes, namely, for the intermediate points, 2 to 6 scores were incorporated. This Semantic Differential scale is an adaptation of Osgood Scale with 7 positions.

  The researcher made use of this Semantic Differential scale in order to find out the respondents ranking of their most preferred gold ornaments (among seven types of gold ornaments). The specimen of the Semantic Differential scale used on this point is shown in Table 1.

TABLE – 1
Semantic Differential Scale for Women Buyers' Preference for Buying Different Types of Gold Ornaments

Types of Gold Ornaments	Ranks by Sample Buyers						
	Least Preferred						Most Preferred
	1	2	3	4	5	6	7
Hairpin	79	219	44	29	9	7	5
Necklace	13	9	41	73	198	34	24
Bracelet	32	51	183	66	41	12	7
Bangle	11	4	8	7	38	262	62
Ring	5	11	91	202	69	5	9
Chain	9	6	4	11	29	47	286
Anklet	226	67	32	29	17	14	7

  The above Table 1 shows the ranking of preferred types of gold ornaments by the sample women buyers in Madurai district. It gives an overall view of all the seven types of gold ornaments. Each of the 392 respondents was requested to mark the position (1 to 7) for the seven types of gold ornaments in the order of their preference. The respondents' marking of their position from 1 to 7 for the seven types of gold ornaments and the weighted average are given in Tables 2 to 8.

  The following Table 2 shows the respondents' marking of their position from 1 to 7 for the gold ornament 'Hairpin'.

TABLE – 2
Women Buyers' Rating for the Gold Ornament 'Hairpin'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	79	20.15	79	0.20
2	219	55.87	438	1.12
3	44	11.21	132	0.34
4	29	7.40	116	0.30
5	9	2.30	45	0.11
6	7	1.79	42	0.11
7 (Most Preferred)	5	1.28	35	0.09
Total	**392**	**100.00**	**887**	**2.26**

  Table 2 indicates that the gold ornament 'Hairpin' has obtained a total score of 887 and the weighted average is 2.26 based on the ratings of buyers. It indicates that less preference is seen in buying of Hairpin.

  The respondents' marking of their position from 1 to 7 for the gold ornament 'Necklace' is depicted in Table 3.

TABLE – 3
Women Buyers' Rating for the Gold Ornament 'Necklace'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	13	3.32	13	0.03

2	9	2.30	18	0.05
3	41	10.46	123	0.31
4	73	18.62	292	0.74
5	198	50.51	990	2.53
6	34	8.67	204	0.52
7 (Most Preferred)	24	6.12	168	0.43
Total	**392**	**100.00**	**1808**	**4.61**

The buyers rating for the gold ornament 'Necklace' is computed in Table 3. It depicts that it has scored a total score of 1808 and a mean score of 4.61. It is evidenced that the ornament 'Necklace' is most preferred by women.

Table 4 displays the respondents' marking of their position from 1 to 7 for the gold ornament 'Bracelet' and its weighted average score.

TABLE – 4
Women Buyers' Rating for the Gold Ornament 'Bracelet'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	32	8.16	32	0.08
2	51	13.01	102	0.26
3	183	46.68	549	1.40
4	66	16.84	264	0.67
5	41	10.46	205	0.52
6	12	3.06	72	0.18
7 (Most Preferred)	7	1.79	49	0.13
Total	**392**	**100.00**	**1273**	**3.25**

It is observed from Table 4 that the calculated rating for the gold ornament 'Bracelet' was 1273 and the weighted average score is 3.25. It means that the women buyer gives more preference to buy this ornament.

The respondents' marking of their position from 1 to 7 for the gold ornament 'Bangle' is exhibited in Table 5.

TABLE – 5
Women Buyers' Rating for the Gold Ornament 'Bangle'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	11	2.81	11	0.03
2	4	1.02	8	0.02
3	8	2.04	24	0.06
4	7	1.78	28	0.07
5	38	9.69	190	0.48
6	262	66.84	1572	4.01
7 (Most Preferred)	62	15.82	434	1.11
Total	**392**	**100.00**	**2267**	**5.78**

The computed buyers rating for the gold ornament 'Bangle' is shown in Table 5 and it has obtained a total score of 2267. The mean score for preferring this gold ornament is 5.78. It indicates that more preference is given to buy this ornament.

Table 6 illustrates the respondents' marking of their position from 1 to 7 for the gold ornament 'Ring'.

TABLE – 6
Women Buyers' Rating for the Gold Ornament 'Ring'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	5	1.28	5	0.01
2	11	2.81	22	0.06
3	91	23.21	273	0.70
4	202	51.53	808	2.06
5	69	17.60	345	0.88
6	5	1.28	30	0.08
7 (Most Preferred)	9	2.30	63	0.16
Total	**392**	**100.00**	**1546**	**3.94**

It is understood from Table 6 that the calculated rating for the gold ornament 'Ring' was 1546 and the weighted average score for this gold ornament is 3.94. It indicates that more preference is given to this ornament by women.

The respondents' marking of their position from 1 to 7 for the gold ornament 'Chain' and the weighted average are given in Table 7.

TABLE – 7
Women Buyers' Rating for the Gold Ornament 'Chain'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	9	2.30	9	0.02
2	6	1.53	12	0.03
3	4	1.01	12	0.03
4	11	2.81	44	0.11
5	29	7.40	145	0.37
6	47	11.99	282	0.72
7 (Most Preferred)	286	72.96	2002	5.11
Total	**392**	**100.00**	**2506**	**6.39**

The women buyers' rating for the gold ornament 'Chain' is computed and it is exhibited in Table 7. This ornament has scored a total score of 2506 and the mean score for this gold ornament is 6.39. It infers that women buyer highly prefers this ornament.

Table 8 reveals the respondents' marking of their position from 1 to 7 for the gold ornament 'Anklet'.

TABLE – 8
Women Buyers' Rating for the Gold Ornament 'Anklet'

Preference Level Score	No. of Respondents	Percentage to Total	Total Score	Weighted Average
1 (Least Preferred)	226	57.65	226	0.58
2	67	17.09	134	0.34
3	32	8.16	96	0.24
4	29	7.40	116	0.30
5	17	4.34	85	0.22
6	14	3.57	84	0.21
7 (Most Preferred)	7	1.79	49	0.13
Total	**392**	**100.00**	**790**	**2.02**

It is observed from the Table 8 that the computed rating for the gold ornament 'Anklet' is 790 and the weighted average score is 2.02. This highlights that less preference is seen in buying this organment by women.

Based on the above analyses from Tables 2 to 8, the respondents' ranking for all the given seven preferred gold ornaments is presented in Table 9.

TABLE – 9
Women Buyers' Ranking for Different Types of Gold Ornaments

S. No.	Types of Gold Ornaments	Total Score	Mean Score	Rank
1	Hairpin	887	2.26	VI
2	Necklace	1808	4.61	III
3	Bracelet	1273	3.25	V
4	Bangle	2267	5.78	II
5	Ring	1546	3.94	IV
6	Chain	2506	6.39	I
7	Anklet	790	2.02	VII

It is inferred from Table 9 that the gold ornament 'Chain' has secured a high mean score of 6.39 among the seven types of gold ornaments. Hence, first rank is given to this gold ornament. Following this, the gold ornament 'Bangle' secured the second position. The third rank goes to 'Necklace' type gold ornament. The remaining ranks fourth, fifth, sixth and seventh is assigned to ring, bracelet, hairpin, and anklet type gold ornaments respectively.

Finally, based on the above weighted mean score for each set of polar opposites for each type of gold ornament, an evaluation was made. These summary measures were plotted on the scales such that the respondents' preference levels of the seven types of gold ornaments were shown in Fig.1.

FIG. 1
Ranking of Gold Ornaments Preferred by Women Buyers

Hairpin	Necklace	Bracelet	Bangle	Ring	Chain	Anklet
VI	III	V	II	IV	I	VII

FINDINGS

The result of the study indicates that the women buyers preferred the gold ornament 'Chain' as their first choice by obtaining a high mean score of 6.39 among the seven types of gold ornaments. Hence, first rank is given to this gold ornament. Next to this, they preferred 'Bangle" as their second choice and 'Necklace' as their third choice. Remaining ornaments are less preferred by them.

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SOCIO-ECONOMIC CHARACTERISTICS OF INSURED HOUSEHOLDS

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ABSTRACT

Insurance occupies an important place in the complex modern world since risk, which can be insured, has increased enormously in every walk of life. This has led to growth in the insurance business and evolution of various types of insurance covers. The insurance sector acts as a mobiliser of savings and a financial intermediary and is also a promoter of investment activities. It can play a significant role in the economic development of a country, while economic development itself can facilitate the growth of the insurance sector. Insurance is a mechanism adopted to share the financial losses that might occur to an individual or his family on the happening of a specified event. The event may be death of the earning member of the family in the case of life insurance, marine-perils in marine insurance, fire in fire insurance and other certain events in miscellaneous insurance. An attempt is made to study the socio-economic characteristics of insured households. This study highlights the insured households' socio-economic characteristics.

KEY WORDS

General Insurance, Health Insuance, Insurance, Insured Households, Life Insurance, Risk Management, Socio-Economic Characteristics

INTRODUCTION

A commonly acknowledged phenomenon is that there is countless risk in every sphere of life. For property, there are fire risks; for shipment of goods, there are perils of sea; for human life there are risks of death or disability and so on. The chances of occurrences of the events causing losses are quite uncertain because these may or may not take place. Therefore, with this view in mind, people create common fund. While it may not be possible to tell in advance which person will suffer the losses, it is possible to work out how many persons on an average, out of a group, may suffer losses. When risk occurs, the loss is made good out of the common fund. In this way, each and every one shares the risk. In fact, they share the loss by payment of premium, which is calculated on the likelihood of loss. In olden time, the contribution by the persons was made at the time of loss.

Insurance can be classified broadly into two categories, viz. (a) Life Insurance, and (b) General or Non-Life insurance. Life insurance is a contract between the policy owner and the insurer, where the insurer agrees to pay the designated beneficiary a sum of money upon the occurrence of the insured individual's death or other event, such as terminal or critical illness. In return, the policy owner agrees to pay a stipulated amount at regular intervals or in lump sum. Life-based contracts tend to fall into two major categories: They are – (a) Protection policies and (b) Investment policies. Protection policies are designed to provide a benefit in case of a specified event, typically against lump sum payment. A common form of this policy is term insurance. The main objective of the investment policies is to facilitate the growth of capital by single or regular premiums. The common forms in this category include whole life, universal life and variable life policies.

General insurance or non-life insurance policies, including automobile and homeowners' policies, provide payments depending on the loss from a particular financial event. General insurance typically comprises any insurance cover that is not deemed to be life insurance. Some categories of general insurance policies are: vehicle, home, health, property, accident, sickness and unemployment, liability, and credit. The terms of insurance generally depend on the company providing the cover.

The business of life insurance in its existing form entered into India from the United Kingdom (UK) with the establishment of Oriental Life Insurance Company (to British firm) in Calcutta in 1818 and followed by Bombay Life Assurance Company in 1823, the Madras Equitable Life Insurance Society in 1829 and Oriental Government Security Life Assurance Company in 1874. Prior to 1871 Indian lives were treated as sub-standard and charged an extra premium of 15 per cent to 20 per cent. Bombay Mutual Life Assurance Society, an Indian insurer which came into existence in 1871, was the first to cover Indian lives at normal rates.

General Insurance would appear to have developed with the industrial revolution in the West and the consequent growth of seafaring trade and commerce in the 17th Century. It came to India from UK. In India, the General Insurance Business was transacted by British and other foreign insurance companies through their agencies. The first general insurance company, viz., Triton Insurance Company Ltd., was established in Calcutta in 1850 whose shares were held mainly by the British. In pursuance of the Nationalization Act, the General Insurance Corporation of India (GIC) was incorporated as a private company under the Companies Act on November 22, 1972 and subsequently it was registered on January 1, 1973 under the Insurance Act, 1938 to carry on all types of General Insurance business. The Government of India subscribed to the capital of GIC and in turn the GIC subscribed to the capital of four subsidiary companies. In this background, the study is undertaken to analyze the socio-economic characteristics of insured households.

LITERATURE REVIEW

A literature review is the comprehensive study and interpretation of literature that relates to a particular topic. It is a vital tool because it provides a synthesis of research and information. Literature reviews are important because they seek to summarize the literature that is available on any one topic. They make sense of a body of research and present an analysis of the available literature so that the reader does not have to access each individual research report included in the review. Hence, this section is devoted to present the various literature reviews available in connection with insurance.

Chollet, Deborah J. (2000) has made an article on "Consumers, Insurers, and Market Behavior". In this article, the author examines exactly who is in the individual insurance market and how consumers in this market compare with the uninsured and employer-insured populations. Differences between the operation of the individual and group markets are considered, including variations related to the structure of sellers in the market. The article concludes with some thoughts about information that might improve public policy governing private health insurance with particular reference to the individual insurance market in America. Pradeep Kansal (2004) in his study titled "Transformation of Insurance in India" explained that the foreign investors are finding Indian market more attractive because even a small share of a growing market looks lucrative. He concluded that in this fast developing scenario it will not be enough if companies have the futuristic strategies. Implementation of the strategies and effectively adapting them to on going changes can spell success. Vivek Gupta (2004) in his paper "Insurance Industry: An Indian Perspective" discussed the major factors that have influenced the Indian insurance industry in the new millennium including the emergence of new distribution channels to market insurance companies, rapid developments in technology and changing industry laws and regulations. He also makes an in-depth analysis of the change in the Indian insurance industry after deregulation. Auit R. Belsare (2005) in his study "Product Development in General Insurance – A Look at the Indian Market" explained that the product life cycle can be slightly modified if somewhere during the maturity stage product innovation takes place and it is repositioned after making improvements in the product. He also expressed that another major constraint the industry faces is the lack of reliable statistics on past losses, insurance rates and prompt claim settlement. He concluded that the regulator will have to ensure that the interests of the policy holders are protected, but at the same time a lot of freedom will have to be given to insurance companies to evolve their own strategies to do business. Tapen Sinha (2005), Swiss Re Visiting Professor, carried out a report "The Indian Insurance Industry: Challenges and Prospects". The objectives of this report were to explore the current state of development in India's insurance market and enumerate the opportunities and challenges offered by this exciting market. This report consists of eight sections. Even though there is strong potential for expansion of insurance into rural areas, growth has so far remained slow. Considering that the bulk of the Indian population still resides in rural areas, it is imperative that the insurance industry's development should not miss this vast sector of the population. Rajesham, Ch. and K. Rajender (2006) in their paper titled "Changing Scenario of Indian Sector" examined the reasons for the entry of private and foreign insurance players into Indian insurance market and added that the present scenario of insurance sector needs to provide with a wide range of world class products and services at competitive price by adopting international best practices to maintain professional standards for enhancing their market share in global insurance players in Indian insurance market. Rao, G.V. (2007) in his paper titled "A Powerful Agent of Change – The Customer Perspective" analyzed the technology, competition and observed that consumers have transformed the way the insurance business transactions are now performed determine how the consumers would like them to be changed. He also stated that the customer is the powerful change agent of the market that would call the shots to shape the future of the insurance market.

The National Council of Applied Economic Research (2011) has made a Pan India Survey about awareness levels about insurance both amongst the uninsured and insured population during March-August, 2010 on behalf of the Insurance Regulatory and Development Authority (IRDA). The objectives of the survey were threefold: (a) To study and analyze awareness levels of the insured population regarding their rights under the Act, policy holder protection regulations, different types of insurance (life insurance including term, single, premium, endowment, unit linked insurance programmes (ULIPs), health insurance, general insurance including householders, burglary, etc.), and levels of protection available from various types of insurance. (b) To study and analyze the awareness levels of the uninsured regarding need for insurance, types of insurance available, insurance interest, benefits of insurance, and benefits of ULIP investment. To generate a socio-economic profile of the insured and uninsured population by socio-economic parameters such as household income, type of dwelling unit, type of ration card held, occupation, literacy levels, etc. The report of the study was presented in seven chapters. Venkatesh Babu, S. (2012) in his article titled "Insurance Business in India – An Overview" discusses the present scenario of insurance industry, the future developing channels and the perceptions and expectations of end users toward insurance industry. With new insurance company coming in India, increase in awareness about insurance in India and good marketing and advertising campaigns carried out by the marketers will give rise and will grow the insurance market in future. Manohar Giri and Devlina Chatterjee (2021) have carried out a research article titled "Factors affecting changes in insured status of rural and urban households: A study over two time periods in India". The main purpose of the study is to understand the socio-economic and demographic determinants of changes in life insurance consumption of Indian households. It seems from the above review that study has not been carried out and research gap is exists. Hence, the authors have undertaken this current research work.

STATEMENT OF THE PROBLEM

Insurance is a mechanism adopted to share the financial losses that might occur to an individual or his family on the happening of a specified event. The event may be death of the earning member of the family in the case of life insurance, marine-perils in marine insurance, fire in fire insurance and other certain events in miscellaneous insurance. The loss arising from these events, if insured, is shared by all the insured in the form of premium. Hence, risk is transferred from one individual to a group.

Insurance is a form of risk management which is used primarily to hedge against the risk of a contingent, uncertain loss. Insurance is defined as the equitable transfer of the risk of loss, from one entity to another, in exchange for payment. Insurance is essentially an arrangement where the losses experienced by a few are extended among many who are exposed to similar risks. It is a protection against financial loss that may occur due to an unexpected event. The transaction involves the insured assuming a guaranteed and known, relatively small loss in the form of payment to the insurer in exchange for the insurer's promise to compensate or indemnify the insured in the case of a large, possibly devastating loss. The insured receives a contract called an insurance policy which details the conditions and circumstances under which the insured will be compensated. In this study, an attempt is made towards the insured households regarding their soio-economic profile.

OBJECTIVE OF THE STUDY

The main objective of the study is to review the socio-economic characteristics of the insured households and analyze the different types of insurance held by them.

METHODOLOGY

This study is both descriptive and analytical. For achieving the said objectives, both primary and secondary data have been used in this study. A comprehensive interview schedule, duly pre-tested, has been designed for collecting primary data. The non-probability method of Random Sampling was followed to choose the insured sample households. For the present analysis, the criterion for any household being considered 'insured' is that at least one member of the household must have insurance. The sudy is carried out in Madurai City.

The main source of data was primary. The researcher administered a comprehensive interview schedule for collecting primary data with regard to the behavioural approach of households towards insurance. This interview schedule was carefully designed with the consultation of insurance advisor and it was duly pre-tested. Pilot study was also undertaken and necessary changes were incorporated before finalization. Sample size selected for the study is 293. For gathering information, the researcher met all the 293 sample households living in different parts of Madurai City. All the analyses and inferences were made on the basis of this primary data. The secondary data have collected from journals, newspapers, reports, theses, and other published research works. In addition, data have been collected from relevant books on Risk Management, Principles of Insurance, Consumer Behaviour, and Marketing Management.

ANALYSIS AND INTERPRETATION

Analysis and intereprtation were carried out based on the primary data generated with the help of an Interview Schedule. The socio-economic characteristics of the insured households have been examined and analyses are given. For the purpose of the study, the criterion for any household being considered 'insured' is that at least one member of the household must have insurance.

ANNUAL INCOME

The households have been classified based on their annual income by the application of mean and standard deviation. In the study, the household's minimum annual income is Rs.60,000 and the maximum is Rs.10,00,000. The mean annual income work out to Rs.2,47,908 and the computed standard deviation is Rs.2,20,874 for a sample of 293 households.   The computed annual income which is greater than or equal to mean plus standard deviation is treated as 'High Income' households and the computed annual income which is less than or equal to mean minus standard deviation is known as 'Low Income' households. The annual income in between the 'low' and 'high' have been termed as 'Middle Income' households. The computed results are shown below.

High Income = Mean + Standard Deviation = Rs.2,47,908 + 2,20,874 = Rs.4,68,782
Low Income = Mean – Standard Deviation = Rs.2,47,908 – 2,20,874 = Rs.27,034
Middle Income = Between Low and High = Rs.27,034 to Rs.4,68,782

Based on the above computation the insured sample households have been classified. The distribution of households based on the annual income is shown in the following Table 1.

TABLE – 1
Distribution of Households based on Annual Income

Annual Income	No. of Households	Percentage
Low Income Households	0	0.00
Middle Income Households	238	81.23
High Income Households	55	18.77
Total	**293**	**100.00**

From Table 1, it is understood that none of the household belongs to 'low income' category in this study. Around 81.23 per cent of households belong to middle income and 18.77 per cent fall under high income category.

As income is considered as the main criterion for buying the insurance, all analyses are carried out based on income category, viz. middle and high income, for further analyses.

GENDER AND AGE

The households are categorized based on their gender, age and marital status and it is shown in Table 2. The member who responded during the survey has been considered for distribution of sample households.

TABLE – 2
Distribution of Households by Sex, Age and Marital Status

Particulars	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Sex						
Male	182	76.5	40	72.7	222	75.8
Female	56	23.5	15	27.3	71	24.2
Age						
18 to 30 Years	22	9.2	3	5.5	25	8.5
31 to 45 Years	93	39.1	24	43.6	117	39.9
46 to 60 Years	107	45.0	25	45.5	132	45.1
Above 60 Years	16	6.7	3	5.5	19	6.5
Marital Status						
Married	212	89.1	52	94.5	264	90.1
Unmarried	26	10.9	3	5.5	29	9.9
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

From the Table 2, the distribution of the sample shows that most of the households (75.8%) interviewed were male and around one-fourth was female. In high income category, around 27.3 per cent of female participated in the survey whereas it was 23.5 per cent in middle income category.

The age-wise profile reveals that a major portion of the households (45.1%) fall in '46 to 60 years' category and 39.9 per cent come under '31 to 45 years' category. While comparison, a higher proportion of high income households (43.6%) in the age group of 31 to 45 years participated in the survey.

Regarding the marital status, 89.1 per cent of middle income category and 94.5 per cent of high income category got married. Overall around 90.1 per cent of households are married members.

The general perception is male respondents normally participate in the survey and they belong to above 30 years. In addition, married respondents dominate more in the survey. The sample population tells the sample story and this holds true for gender and age-wise distribution.

RELIGION AND CASTE

An attempt is made to group the respondents on the basis of their religion and caste. This also forms one of the aspects of social characteristics of the insured households. Religion has been grouped into Hindu, Muslim and Christian. But the caste has been classified as Scheduled Caste/Tribe, Most Backward Class, Backward Class and Others (i.e. who come under general category). A classification of households by religion and caste is given in Table 3.

TABLE – 3
Distribution of Households by Religion and Caste

Particulars	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Religion						
Hindu	153	64.3	38	69.1	191	65.2
Muslim	47	19.7	7	12.7	54	18.4
Christian	38	16.0	10	18.2	48	16.4
Caste						
Schedule Caste/Tribe	23	9.7	6	10.9	29	9.9
Most Backward Class	49	20.6	16	29.1	65	22.2
Backward Class	95	39.9	14	25.5	109	37.2
Others	71	29.8	19	34.5	90	30.7
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

It is observed from Table 3 that a majority of 65.2 per cent of households belong to 'Hindu' religion. But the Muslim and Christian religious households account for 18.4 per cent and 16.4 per cent respectively in overall. In high income category, 69.1 per cent fall in Hindu, 12.7 per cent in Muslim and 18.2 per cent in Christian whereas it is 64.3, 19.7 and 16 per cent respectively in middle income category.

Regarding caste-wise distribution, 37.2 per cent belong to Backward Class, 30.7 per cent come under 'others' category, 22.2 per cent fall in 'Most Backward Class' and Scheduled Caste/Tribe accounts for 9.9 per cent only. While comparing income-wise, 'Backward Class' dominates more in middle income category (39.9%) and 'Other' community dominates in high income (29.8%).

The general opinion is the Hindu religious people account more than other religious people in Madurai City. Like that the 'most backward class' and 'other community' account for a major portion. The same opinion is observed from the study.

OCCUPATION AND EDUCATION

The occupation which forms the major source of income for the family has been taken into account as the occupation of the household. Similarly, the highest level of education of any member in the household has been taken as its level of education. This was done because, even where the head of the family is not literate, the younger members might be well educated and, being aware of insurance, they become responsible for the household becoming insured.

The distribution of households by occupation and level of education is given in Table 4. The occupation is normally classified as private service, government service, business/profession, self-employed and others. The level of education is classified into four categories, viz. illiterate, up to secondary level, up to higher secondary and graduate and above.

TABLE – 4
Distribution of Households by Main Occupation and Level of Education

Particulars	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Occupation						
Private Service	61	25.6	15	27.3	76	25.9
Government Service	74	31.1	19	34.5	93	31.3
Business / Profession	54	22,7	15	27.3	69	23.5
Self-employed	26	10.9	5	9.1	31	10.6
Others	23	9.7	1	1.8	24	8.2
Highest Level of Education						
Illiterate	15	6.3	5	9.1	20	6.8
Up to Secondary School	58	24.4	18	32.7	76	25.9
Up to Higher Secondary	73	30.7	12	21.8	85	29.0
Graduate and Above	92	38.7	20	36.4	112	38.2
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

It can be seen from Table 4 that a high percentage of the insured households are – a) government service to the extent of 31.3 per cent; b) private service accounts for 25.9 per cent; and c) business or profession to the tune of 23.5 per cent. It is also observed from the table that a high proportion of high income households are insured than the middle income households. The low percentage of insured households are – self employed (10.6%) and others category (8.2%). Among these households, middle income households dominate more than high income households towards insurance.

As regards the highest level of education, around 38.7 per cent are 'graduates and above' in middle income households and 36.4 per cent are in high income households. Around 30.7 per cent of middle income households and 21.8 per cent of high income households have studied 'up to higher secondary' level of education. About 33 per cent of high income households and 24 per cent of middle income households' education are 'up to secondary level'. The 'illiterate' account for 9.1 per cent in high income and 6.3 per cent in middle income category. This shows that the proportion of illiterate households is slightly higher in high income than middle income households.

It is also observed form Table 4 that in the sample study around 93 per cent are educated. Thus the education influences the households to take insurance. Among the income group, the highest proportion of illiterates is seen in high income category (9.1%).

TYPE OF DWELLING UNIT AND FAMILY

An attempt is made to ascertain the type of dwelling in which the household lives and its ownership. Further, the family type of the household is also ascertained for analysis. A classification of households by ownership of dwelling unit, type of dwelling unit and family type is exhibited in Table 5.

TABLE – 5
Distribution of Households by Ownership of Dwelling Unit, Type of Dwelling Unit and Family Type

Particulars	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Ownership of Dwelling Unit						
Own	105	44.1	26	47.3	131	44.7
Rented	72	30.3	18	32.7	90	30.7
Leased	47	19.7	10	18.2	57	19.5
Others	14	5.9	1	1.8	15	5.1
Type of Dwelling Unit						
Pucca	133	55.9	29	52.7	162	55.3
Semi-Pucca	105	44.1	26	47.3	131	44.7
Others	0	0	0	0	0	0
Family Type						
Nuclear	163	68.5	33	60.0	196	66.9
Joint	75	31.5	22	40.0	97	33.1
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

It is found from Table 5 that a comparatively higher percentage of high income category households (47.3%) own dwelling type in comparison with middle income category (44.1%). Overall, in the study unit around 44.7 per cent of households own dwelling unit. Next to this, rented households account for 30.7 per cent and leased households form 19.5 per cent.

Households living in pucca houses account for 55.9 per cent in middle income category whereas it is 52.7 per cent in high income category. In total, 55.3 per cent lives in pucca houses and 44.7 per cent in semi-pucca houses. It seems that the living conditions of the insured households are better.

The general perception is that people living in joint families are emotionally and financially more secure, and so it makes more sense for people living in nuclear families to have insurance. However, the data from the sample population tells a different story. It can be seen from Table 5 that a higher proportion of households in nuclear family (66.9%) have insurance than the joint family (33.1%).

TYPE OF RATION CARD

The households are categorized by the type of ration card they possess. The type has been classified as Above Poverty Line (APL), Below Poverty Line (BPL) and no card. The distribution is displayed in Table 6.

TABLE – 6
Distribution of Households by Type of Ration Card

Type of Ration Card	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Above Poverty Line	150	63.0	41	74.5	191	65.2
Below Poverty Line	59	24.8	0	0	59	20.1
No Card	29	12.2	14	25.5	43	14.7
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

Table 6 shows the possession of different types of ration card by the sample households. A higher proportion of high income households (74.5%) possess 'Above Poverty Line' cards while comparing with middle income households. Below Poverty Line cards are possessed only by the middle income households in the sample study. Around 25.5 per cent of high income households and 12.2 per cent of middle income households do not possess any cards.

From the above observations, it is concluded that a majority of 65.2 per cent of sample households possess 'Above Poverty Line' cards and 20.1 per cent possess 'Below Poverty Line' cards.

SAVINGS AND EXPENDITURE

The percentage of annual savings and expenditure of the sample households have been attempted by the researcher. This is analyzed by finding out the minimum, maximum and mean. The distribution is shown in Table 7.

TABLE – 7
Households' Average Annual Savings and Expenditure

Particulars	Minimum %	Maximum %	Average %
Average Savings			
Savings	8.00	30.00	14.0375
Average Expenditure			
Food	10.00	30.00	18.9761
Clothing	9.00	15.00	10.9932
Medical (Health)	3.00	8.00	5.1775
Rent and Taxes	10.00	30.00	19.6997
Education	8.00	12.00	9.7679
Entertainment	3.00	6.00	4.3584
Insurance Premiums	3.00	15.00	8.3003
Others	3.00	17.00	8.6894

It can be seen from Table 7 that a minimum of 8 per cent and a maximum of 30 per cent have been saved by the households. The average (i.e. mean) worked out to 14.04 per cent. The minimum and maximum expenditure on various items are – a) Food (10 to 30%), b) Clothing (9 to 15%), c) Medical (3 to 8 %), d) Rent and Taxes (10 to 30%), e) Education (8 to 12%), f) Entertainment (3 to 6%), g) Insurance Premiums (3 to 15%), and h) Others (3 to 17%).

It is noted from Table 7 that the average spending is higher on rent and taxes (19.70%), food (18.98%) and clothing (10.99%) when compared to other items of expenditure. The lowest spending is on entertainment (4.36%) followed by medical (5.18%).

REASONS FOR DEBT

An observation regarding the debt position of the households and the reasons for that has been made. Out of the total of 238 middle income households, a vast majority of 197 households constituting 88.77 per cent have debt. In high income category, out of 55 sample households 39 households constituting 70.91 per cent have debt in the sample study. The reason for having debt is gathered from households and the same is exhibited in Table 8.

TABLE – 8
Distribution of Households by Reasons for Debt

Reasons	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Children's Education	11	5.6	5	12.8	16	6.8
Construction of House	154	78.2	26	66.7	180	76.3
Medical Treatment	8	4.1	1	2.6	9	3.8
Wedding in Family	6	3.0	0	0	6	2.5
Emergency Needs	13	6.6	4	10.2	17	7.2
Others	5	2.5	3	7.7	8	3.4
Total	**197**	**100.0**	**39**	**100.0**	**236**	**100.0**

It is found from Table 8 that a major portion of households (76.3%) reported having debt for construction of house. Next to this, around 7.2 per cent have borrowed money for emergency needs; following this 6.8 per cent reported having debt due to children's education.

Regarding income-wise distribution, 78.2 per cent of middle income households borrowed money for construction of house where it is 66.7 per cent in high income households. The reason for debt 'emergency needs' and 'children's education' account for 6.6 per cent and 5.6 per cent in middle income segment. But it is 10.2 per cent and 12.8 per cent in high income segment. No high income household borrowed money for wedding in their family.

From the above, it is understood that due to the construction of houses by the households most of them are having debt.

TYPE OF INSURANCE HELD

The distribution of households by type of insurance held is depicted in Table 9.

TABLE – 9
Distribution of Households by Type of Insurance Taken

Type of Insurance Held	Ranking by Sample Households					
	Middle Income		High Income		Total	
	No.	Rank	No.	Rank	No.	Rank
Life Insurance	189 (79.4)	II	31 (56.4)	II	220 (75.1)	II
Health Insurance	238 (100.0)	I	55 (100.0)	I	293 (100.0)	I
Motor Insurance	164 (68.9)	III	28 (50.9)	III	192 (65.5)	III
Accident Insurance	92 (38.7)	IV	7 (12.7)	IV	99 (33.8)	IV
Property Insurance	0 (0.0)	-	1 (1.8)	VI	1 (0,3)	VI
Fire Insurance	6 (2.5)	V	4 (7.3)	V	10 (3.4)	V
Total Sample Households	238		55		293	

(Figures in parenthesis indicate percentage)

It is evident from Table 9 that all the sample respondents have health insurance in this study and hence it is positioned in the first position. It is noteworthy that out of 238 middle income households, 189 households constituting 79.4 per cent have life insurance. It is 56.4 per cent in high income segment. Overall 75.1 per cent households have life insurance in addition to health insurance. Hence, it is placed in the second rank. The third rank is assigned to 'motor insurance' by both the middle and high income households. Accident insurance and fire insurance are placed in the fourth and the fifth ranks respectively. Property insurance is held only by one of the high income household in the sample study and a meagre per cent (i.e. 1.8) is accounted for this. So, the last rank (i.e. sixth rank) is given to this type of insurance.

From the observation it is concluded that a higher proportion of life insurance is held by the sample households in addition to the health insurance. This proportion is higher in middle income than the high income segment. Following this, a major portion of households have taken motor insurance in the sample unit.

DETAILS OF POLICIES HELD BY MEMBERS OF HOUSEHOLDS

The survey collected shows detailed information about the insurance policies held by different members of the households like whether they have taken the insurance cover from government or private companies, the amount of annual premium paid, amount insured, etc. All these details are analyzed in this part.

Proportion of Policyholders:

Table 10 provides information about the proportion of household members having life insurance, health insurance and general insurance under both public (i.e. government) and private sectors, based on their income categories. As more than one member from the same household can opt for insurance, the table shows the number of members and not the number of households.

TABLE – 10
Distribution of Household Members with Insurance

Insurance Category	No. of Members Insured					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Life Insurance – Govt.	209	92.1	18	7.9	227	100.0
Life Insurance – Private	43	62.3	26	37.7	69	100.0
Health Insurance – Govt.	264	78.6	72	21.4	336	100.0
Health Insurance - Private	32	60.4	21	39.6	53	100.0
General Insurance – Govt.	114	87.0	17	13.0	131	100.0
General Insurance - Private	52	86.7	8	13.3	60	100.0

While examining the Table 10 it is found that the insurance in government sector shows a higher proportion in life (92.1%) and health insurance (78.6%) than the private sector in middle income segment. But in high income segment, it is just reversed, i.e. private sector dominates more than the public sector. In both income segments, the percentage of members insured in general insurance under public and private sectors have comparatively an equal proportion.

Gender-wise Distribution of Policyholders:

The details of insurance policies held by members of households have been classified based on gender. The distribution of policyholders by gender is shown in Table 11.

TABLE – 11
Distribution of Policyholders by Gender

Insurance Category	No. of Members Insured					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Life Insurance – Govt.	193	85.0	34	15.0	227	100.0
Life Insurance – Private	48	69.6	21	30.4	69	100.0
Health Insurance – Govt.	273	81.3	63	18.7	336	100.0
Health Insurance - Private	35	66.0	18	34.0	53	100.0
General Insurance – Govt.	102	77.9	29	22.1	131	100.0
General Insurance - Private	53	88.3	7	11.7	60	100.0

It can be seen from Table 11 that while comparing the government and private insurance category, a higher proportion of male member is insured with government life and health insurance. But in case of general insurance, more male members are insured with private insurance sector. It is just reversed in the case of female insured members in the households. The details of insured female are – life insurance – government (15%), private (30.4%); health insurance – government (18.7%), private (34%); general insurance – government (22.1%), private (11.7%). It is observed that the views in respect of male and female are differ with regard to insurance policy.

Average Annual Insurance Premium:

The minimum, maximum and average annual insurance premium paid by the members of households for all the three categories of insurance is given in Table 12.

TABLE – 12
Average Annual Insurance Premium Paid

Particulars	Minimum (Rs.)	Maximum (Rs.)	Average (Rs.)
Life Insurance – Govt.	1,025	82,000	16,382
Life Insurance – Private	1,200	58,000	11,226
Health Insurance – Govt.	3,600	14,000	6,894
Health Insurance - Private	3,200	13,500	5,291
General Insurance – Govt.	800	4,000	1,489
General Insurance - Private	850	5,400	1,513

It is found from Table 12 that the minimum and maximum insurance premium paid by the members of households for different categories of insurance are – Life insurance (Govt.) Rs.1,025 and Rs.82,000; Life insurance (Private) Rs.1,200 and Rs.58,000; Health insurance (Govt.) Rs.3,600 and Rs.14,000; Health insurance (Private) Rs.3,200 and Rs.13,500; General insurance (Govt.) Rs.800 and Rs.4,000; and General insurance (Private) Rs. 850 and Rs.5,400. From this it seems that in minimum category a higher proportion is paid for private life insurance and general insurance. But in health insurance, a higher proportion is paid for the government health insurance.

The average annual premium paid by the members of households for government life insurance is Rs.16,382 whereas it is Rs.11,226 in private life insurance. In case of health insurance it is Rs.6,894 for government sector and Rs.5,291 for private sector. The premium paid towards government sector is higher in case of life insurance and health insurance but it is low for general insurance.

From Table 12 it is understood that most of members of households preferred the government sector insurance than the private sector for life and health.

MAJOR SOURCES OF INFORMATION

An attempt is made to analyze the major sources of information regarding insurance. The result of analysis is presented in Table 13.

TABLE – 13
Distribution of Households by Major Sources of Information

Sources	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Newspapers/Magazines	12	5.0	4	7.3	16	5.5
Radio	9	3.8	0	0.0	9	3.1
Television	10	4.2	2	3.6	12	4.1
Internet	13	5.5	3	5.5	16	5.5
Agents	129	54.2	27	49.1	156	53.2
Relatives and Friends	28	11.8	11	20.0	39	13.3
Neighbours and Colleagues	14	5.9	6	10.9	20	6.8
Others	6	2.5	0	0.0	6	2.0
None	17	7.1	2	3.6	19	6.5
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

It is observed from Table 13 that the 'agents' is the main source of information for both the middle and high income households and it accounts by 54.2 per cent and 49.1 per cent respectively. Following this, relatives and friends who exchange information in the middle income households work out to 11.8 per cent and it is 20 per cent in high income households. The source 'relatives and friends' enjoyed a higher proportion in high income segment. Next to this, 'neighbours and colleagues' accounted for 5.9 per cent and 10.9 per cent by the middle and high income households respectively. The other sources come in order.

The overall analysis shows that 'agents' is the main source of information (53.2%), followed by relatives and friends (13.3%) who exchange news. The other major sources of information are neighbours and colleagues (6.8%), internet (5.5%) and newspapers/magazines (5.5%). It is evident from the analysis that around 6.5 per cent of households are not influenced by any sources.

HEALTH INSURANCE – SIMILAR TO SAVINGS

A question has been asked to the sample households to express their opinion whether the health insurance is similar to thrift/savings or not. The opinion is different from one household to another. The sample households' opinions are illustrated in Table 14.

TABLE – 14
Opinion of Households towards Health Insurance Similar to Savings

Opinion	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Yes	45	18.9	12	21.8	57	19.5
No	193	81.1	43	78.2	236	80.5
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

From Table 14 it is understood that out of 293 sample households, 236 households constituting 80.5 per cent expressed that health insurance is not similar to thrift or savings and the remaining 57 households constituting 19.5 per cent have treated health insurance as similar to savings. About 21.8 per cent of high income households have thought that the health insurance is similar to savings but it is 18.9 per cent in middle income households. It is observed from the study that majority of households know that the health insurance is not similar to savings.

FINDINGS

The following are the important findings of the study.

1. In this study, middle income households accounts for 81.23 per cent and high income accounts for 18.77 per cent.
2. Majority of the households (75.8%) were male and around one-fourth was female.
3. It is evident from the study that a high percentage of the insured households are – a) government service to the extent of 31.3 per cent; b) private service accounts for 25.9 per cent; and c) business or profession to the tune of 23.5 per cent. Among these households, middle income households dominate more than high income households towards insurance.
4. All the sample respondents have health insurance in this study and hence it is positioned in the first position. It is noteworthy that out of 238 middle income households, 189 households constituting 79.4 per cent have life insurance. It is 56.4 per cent in high income segment. Overall 75.1 per cent households have life insurance in addition to health insurance. Hence, it is placed in the second rank.
5. It is found that the insurance in government sector shows a higher proportion in life (92.1%) and health insurance (78.6%) than the private sector in middle income segment.
6. The source 'agents' is the main source of information for both the middle and high income households and it accounts by 54.2 per cent and 49.1 per cent respectively.

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SOCIO-ECONOMIC CHARACTERISTICS OF INSURED HOUSEHOLDS

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ABSTRACT

Insurance occupies an important place in the complex modern world since risk, which can be insured, has increased enormously in every walk of life. This has led to growth in the insurance business and evolution of various types of insurance covers. The insurance sector acts as a mobiliser of savings and a financial intermediary and is also a promoter of investment activities. It can play a significant role in the economic development of a country, while economic development itself can facilitate the growth of the insurance sector. Insurance is a mechanism adopted to share the financial losses that might occur to an individual or his family on the happening of a specified event. The event may be death of the earning member of the family in the case of life insurance, marine-perils in marine insurance, fire in fire insurance and other certain events in miscellaneous insurance. An attempt is made to study the socio-economic characteristics of insured households. This study highlights the insured households' socio-economic characteristics.

KEY WORDS

General Insurance, Health Insuance, Insurance, Insured Households, Life Insurance, Risk Management, Socio-Economic Characteristics

INTRODUCTION

A commonly acknowledged phenomenon is that there is countless risk in every sphere of life. For property, there are fire risks; for shipment of goods, there are perils of sea; for human life there are risks of death or disability and so on. The chances of occurrences of the events causing losses are quite uncertain because these may or may not take place. Therefore, with this view in mind, people create common fund. While it may not be possible to tell in advance which person will suffer the losses, it is possible to work out how many persons on an average, out of a group, may suffer losses. When risk occurs, the loss is made good out of the common fund. In this way, each and every one shares the risk. In fact, they share the loss by payment of premium, which is calculated on the likelihood of loss. In olden time, the contribution by the persons was made at the time of loss.

Insurance can be classified broadly into two categories, viz. (a) Life Insurance, and (b) General or Non-Life insurance. Life insurance is a contract between the policy owner and the insurer, where the insurer agrees to pay the designated beneficiary a sum of money upon the occurrence of the insured individual's death or other event, such as terminal or critical illness. In return, the policy owner agrees to pay a stipulated amount at regular intervals or in lump sum. Life-based contracts tend to fall into two major categories: They are – (a) Protection policies and (b) Investment policies. Protection policies are designed to provide a benefit in case of a specified event, typically against lump sum payment. A common form of this policy is term insurance. The main objective of the investment policies is to facilitate the growth of capital by single or regular premiums. The common forms in this category include whole life, universal life and variable life policies.

General insurance or non-life insurance policies, including automobile and homeowners' policies, provide payments depending on the loss from a particular financial event. General insurance typically comprises any insurance cover that is not deemed to be life insurance. Some categories of general insurance policies are: vehicle, home, health, property, accident, sickness and unemployment, liability, and credit. The terms of insurance generally depend on the company providing the cover.

The business of life insurance in its existing form entered into India from the United Kingdom (UK) with the establishment of Oriental Life Insurance Company (to British firm) in Calcutta in 1818 and followed by Bombay Life Assurance Company in 1823, the Madras Equitable Life Insurance Society in 1829 and Oriental Government Security Life Assurance Company in 1874. Prior to 1871 Indian lives were treated as sub-standard and charged an extra premium of 15 per cent to 20 per cent. Bombay Mutual Life Assurance Society, an Indian insurer which came into existence in 1871, was the first to cover Indian lives at normal rates.

General Insurance would appear to have developed with the industrial revolution in the West and the consequent growth of seafaring trade and commerce in the 17th Century. It came to India from UK. In India, the General Insurance Business was transacted by British and other foreign insurance companies through their agencies. The first general insurance company, viz., Triton Insurance Company Ltd., was established in Calcutta in 1850 whose shares were held mainly by the British. In pursuance of the Nationalization Act, the General Insurance Corporation of India (GIC) was incorporated as a private company under the Companies Act on November 22, 1972 and subsequently it was registered on January 1, 1973 under the Insurance Act, 1938 to carry on all types of General Insurance business. The Government of India subscribed to the capital of GIC and in turn the GIC subscribed to the capital of four subsidiary companies. In this background, the study is undertaken to analyze the socio-economic characteristics of insured households.

LITERATURE REVIEW

A literature review is the comprehensive study and interpretation of literature that relates to a particular topic. It is a vital tool because it provides a synthesis of research and information. Literature reviews are important because they seek to summarize the literature that is available on any one topic. They make sense of a body of research and present an analysis of the available literature so that the reader does not have to access each individual research report included in the review. Hence, this section is devoted to present the various literature reviews available in connection with insurance.

Chollet, Deborah J. (2000) has made an article on "Consumers, Insurers, and Market Behavior". In this article, the author examines exactly who is in the individual insurance market and how consumers in this market compare with the uninsured and employer-insured populations. Differences between the operation of the individual and group markets are considered, including variations related to the structure of sellers in the market. The article concludes with some thoughts about information that might improve public policy governing private health insurance with particular reference to the individual insurance market in America. Pradeep Kansal (2004) in his study titled "Transformation of Insurance in India" explained that the foreign investors are finding Indian market more attractive because even a small share of a growing market looks lucrative. He concluded that in this fast developing scenario it will not be enough if companies have the futuristic strategies. Implementation of the strategies and effectively adapting them to on going changes can spell success. Vivek Gupta (2004) in his paper "Insurance Industry: An Indian Perspective" discussed the major factors that have influenced the Indian insurance industry in the new millennium including the emergence of new distribution channels to market insurance companies, rapid developments in technology and changing industry laws and regulations. He also makes an in-depth analysis of the change in the Indian insurance industry after deregulation. Auit R. Belsare (2005) in his study "Product Development in General Insurance – A Look at the Indian Market" explained that the product life cycle can be slightly modified if somewhere during the maturity stage product innovation takes place and it is repositioned after making improvements in the product. He also expressed that another major constraint the industry faces is the lack of reliable statistics on past losses, insurance rates and prompt claim settlement. He concluded that the regulator will have to ensure that the interests of the policy holders are protected, but at the same time a lot of freedom will have to be given to insurance companies to evolve their own strategies to do business. Tapen Sinha (2005), Swiss Re Visiting Professor, carried out a report "The Indian Insurance Industry: Challenges and Prospects". The objectives of this report were to explore the current state of development in India's insurance market and enumerate the opportunities and challenges offered by this exciting market. This report consists of eight sections. Even though there is strong potential for expansion of insurance into rural areas, growth has so far remained slow. Considering that the bulk of the Indian population still resides in rural areas, it is imperative that the insurance industry's development should not miss this vast sector of the population. Rajesham, Ch. and K. Rajender (2006) in their paper titled "Changing Scenario of Indian Sector" examined the reasons for the entry of private and foreign insurance players into Indian insurance market and added that the present scenario of insurance sector needs to provide with a wide range of world class products and services at competitive price by adopting international best practices to maintain professional standards for enhancing their market share in global insurance players in Indian insurance market. Rao, G.V. (2007) in his paper titled "A Powerful Agent of Change – The Customer Perspective" analyzed the technology, competition and observed that consumers have transformed the way the insurance business transactions are now performed determine how the consumers would like them to be changed. He also stated that the customer is the powerful change agent of the market that would call the shots to shape the future of the insurance market.

The National Council of Applied Economic Research (2011) has made a Pan India Survey about awareness levels about insurance both amongst the uninsured and insured population during March-August, 2010 on behalf of the Insurance Regulatory and Development Authority (IRDA). The objectives of the survey were threefold: (a) To study and analyze awareness levels of the insured population regarding their rights under the Act, policy holder protection regulations, different types of insurance (life insurance including term, single, premium, endowment, unit linked insurance programmes (ULIPs), health insurance, general insurance including householders, burglary, etc.), and levels of protection available from various types of insurance. (b) To study and analyze the awareness levels of the uninsured regarding need for insurance, types of insurance available, insurance interest, benefits of insurance, and benefits of ULIP investment. To generate a socio-economic profile of the insured and uninsured population by socio-economic parameters such as household income, type of dwelling unit, type of ration card held, occupation, literacy levels, etc. The report of the study was presented in seven chapters. Venkatesh Babu, S. (2012) in his article titled "Insurance Business in India – An Overview" discusses the present scenario of insurance industry, the future developing channels and the perceptions and expectations of end users toward insurance industry. With new insurance company coming in India, increase in awareness about insurance in India and good marketing and advertising campaigns carried out by the marketers will give rise and will grow the insurance market in future. Manohar Giri and Devlina Chatterjee (2021) have carried out a research article titled "Factors affecting changes in insured status of rural and urban households: A study over two time periods in India". The main purpose of the study is to understand the socio-economic and demographic determinants of changes in life insurance consumption of Indian households. It seems from the above review that study has not been carried out and research gap is exists. Hence, the authors have undertaken this current research work.

STATEMENT OF THE PROBLEM

Insurance is a mechanism adopted to share the financial losses that might occur to an individual or his family on the happening of a specified event. The event may be death of the earning member of the family in the case of life insurance, marine-perils in marine insurance, fire in fire insurance and other certain events in miscellaneous insurance. The loss arising from these events, if insured, is shared by all the insured in the form of premium. Hence, risk is transferred from one individual to a group.

Insurance is a form of risk management which is used primarily to hedge against the risk of a contingent, uncertain loss. Insurance is defined as the equitable transfer of the risk of loss, from one entity to another, in exchange for payment. Insurance is essentially an arrangement where the losses experienced by a few are extended among many who are exposed to similar risks. It is a protection against financial loss that may occur due to an unexpected event. The transaction involves the insured assuming a guaranteed and known, relatively small loss in the form of payment to the insurer in exchange for the insurer's promise to compensate or indemnify the insured in the case of a large, possibly devastating loss. The insured receives a contract called an insurance policy which details the conditions and circumstances under which the insured will be compensated. In this study, an attempt is made towards the insured households regarding their soio-economic profile.

OBJECTIVE OF THE STUDY

The main objective of the study is to review the socio-economic characteristics of the insured households and analyze the different types of insurance held by them.

METHODOLOGY

This study is both descriptive and analytical. For achieving the said objectives, both primary and secondary data have been used in this study. A comprehensive interview schedule, duly pre-tested, has been designed for collecting primary data. The non-probability method of Random Sampling was followed to choose the insured sample households. For the present analysis, the criterion for any household being considered 'insured' is that at least one member of the household must have insurance. The sudy is carried out in Madurai City.

The main source of data was primary. The researcher administered a comprehensive interview schedule for collecting primary data with regard to the behavioural approach of households towards insurance. This interview schedule was carefully designed with the consultation of insurance advisor and it was duly pre-tested. Pilot study was also undertaken and necessary changes were incorporated before finalization. Sample size selected for the study is 293. For gathering information, the researcher met all the 293 sample households living in different parts of Madurai City. All the analyses and inferences were made on the basis of this primary data. The secondary data have collected from journals, newspapers, reports, theses, and other published research works. In addition, data have been collected from relevant books on Risk Management, Principles of Insurance, Consumer Behaviour, and Marketing Management.

ANALYSIS AND INTERPRETATION

Analysis and intereprtation were carried out based on the primary data generated with the help of an Interview Schedule. The socio-economic characteristics of the insured households have been examined and analyses are given. For the purpose of the study, the criterion for any household being considered 'insured' is that at least one member of the household must have insurance.

ANNUAL INCOME

The households have been classified based on their annual income by the application of mean and standard deviation. In the study, the household's minimum annual income is Rs.60,000 and the maximum is Rs.10,00,000. The mean annual income work out to Rs.2,47,908 and the computed standard deviation is Rs.2,20,874 for a sample of 293 households. The computed annual income which is greater than or equal to mean plus standard deviation is treated as 'High Income' households and the computed annual income which is less than or equal to mean minus standard deviation is known as 'Low Income' households. The annual income in between the 'low' and 'high' have been termed as 'Middle Income' households. The computed results are shown below.

High Income = Mean + Standard Deviation = Rs.2,47,908 + 2,20,874 = Rs.4,68,782
Low Income = Mean – Standard Deviation = Rs.2,47,908 – 2,20,874 = Rs.27,034
Middle Income = Between Low and High = Rs.27,034 to Rs.4,68,782

Based on the above computation the insured sample households have been classified. The distribution of households based on the annual income is shown in the following Table 1.

TABLE – 1
Distribution of Households based on Annual Income

Annual Income	No. of Households	Percentage
Low Income Households	0	0.00
Middle Income Households	238	81.23
High Income Households	55	18.77
Total	**293**	**100.00**

From Table 1, it is understood that none of the household belongs to 'low income' category in this study. Around 81.23 per cent of households belong to middle income and 18.77 per cent fall under high income category.

As income is considered as the main criterion for buying the insurance, all analyses are carried out based on income category, viz. middle and high income, for further analyses.

GENDER AND AGE

The households are categorized based on their gender, age and marital status and it is shown in Table 2. The member who responded during the survey has been considered for distribution of sample households.

TABLE – 2
Distribution of Households by Sex, Age and Marital Status

Particulars	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Sex						
Male	182	76.5	40	72.7	222	75.8
Female	56	23.5	15	27.3	71	24.2
Age						
18 to 30 Years	22	9.2	3	5.5	25	8.5
31 to 45 Years	93	39.1	24	43.6	117	39.9
46 to 60 Years	107	45.0	25	45.5	132	45.1
Above 60 Years	16	6.7	3	5.5	19	6.5
Marital Status						
Married	212	89.1	52	94.5	264	90.1
Unmarried	26	10.9	3	5.5	29	9.9
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

From the Table 2, the distribution of the sample shows that most of the households (75.8%) interviewed were male and around one-fourth was female. In high income category, around 27.3 per cent of female participated in the survey whereas it was 23.5 per cent in middle income category.

The age-wise profile reveals that a major portion of the households (45.1%) fall in '46 to 60 years' category and 39.9 per cent come under '31 to 45 years' category. While comparison, a higher proportion of high income households (43.6%) in the age group of 31 to 45 years participated in the survey.

Regarding the marital status, 89.1 per cent of middle income category and 94.5 per cent of high income category got married. Overall around 90.1 per cent of households are married members.

The general perception is male respondents normally participate in the survey and they belong to above 30 years. In addition, married respondents dominate more in the survey. The sample population tells the sample story and this holds true for gender and age-wise distribution.

RELIGION AND CASTE

An attempt is made to group the respondents on the basis of their religion and caste. This also forms one of the aspects of social characteristics of the insured households. Religion has been grouped into Hindu, Muslim and Christian. But the caste has been classified as Scheduled Caste/Tribe, Most Backward Class, Backward Class and Others (i.e. who come under general category). A classification of households by religion and caste is given in Table 3.

TABLE – 3
Distribution of Households by Religion and Caste

Particulars	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Religion						
Hindu	153	64.3	38	69.1	191	65.2
Muslim	47	19.7	7	12.7	54	18.4
Christian	38	16.0	10	18.2	48	16.4
Caste						
Schedule Caste/Tribe	23	9.7	6	10.9	29	9.9
Most Backward Class	49	20.6	16	29.1	65	22.2
Backward Class	95	39.9	14	25.5	109	37.2
Others	71	29.8	19	34.5	90	30.7
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

It is observed from Table 3 that a majority of 65.2 per cent of households belong to 'Hindu' religion. But the Muslim and Christian religious households account for 18.4 per cent and 16.4 per cent respectively in overall. In high income category, 69.1 per cent fall in Hindu, 12.7 per cent in Muslim and 18.2 per cent in Christian whereas it is 64.3, 19.7 and 16 per cent respectively in middle income category.

Regarding caste-wise distribution, 37.2 per cent belong to Backward Class, 30.7 per cent come under 'others' category, 22.2 per cent fall in 'Most Backward Class' and Scheduled Caste/Tribe accounts for 9.9 per cent only. While comparing income-wise, 'Backward Class' dominates more in middle income category (39.9%) and 'Other' community dominates in high income (29.8%).

The general opinion is the Hindu religious people account more than other religious people in Madurai City. Like that the 'most backward class' and 'other community' account for a major portion. The same opinion is observed from the study.

OCCUPATION AND EDUCATION

The occupation which forms the major source of income for the family has been taken into account as the occupation of the household. Similarly, the highest level of education of any member in the household has been taken as its level of education. This was done because, even where the head of the family is not literate, the younger members might be well educated and, being aware of insurance, they become responsible for the household becoming insured.

The distribution of households by occupation and level of education is given in Table 4. The occupation is normally classified as private service, government service, business/profession, self-employed and others. The level of education is classified into four categories, viz. illiterate, up to secondary level, up to higher secondary and graduate and above.

TABLE – 4
Distribution of Households by Main Occupation and Level of Education

Particulars	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Occupation						
Private Service	61	25.6	15	27.3	76	25.9
Government Service	74	31.1	19	34.5	93	31.3
Business / Profession	54	22,7	15	27.3	69	23.5
Self-employed	26	10.9	5	9.1	31	10.6
Others	23	9.7	1	1.8	24	8.2
Highest Level of Education						
Illiterate	15	6.3	5	9.1	20	6.8
Up to Secondary School	58	24.4	18	32.7	76	25.9
Up to Higher Secondary	73	30.7	12	21.8	85	29.0
Graduate and Above	92	38.7	20	36.4	112	38.2
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

It can be seen from Table 4 that a high percentage of the insured households are – a) government service to the extent of 31.3 per cent; b) private service accounts for 25.9 per cent; and c) business or profession to the tune of 23.5 per cent. It is also observed from the table that a high proportion of high income households are insured than the middle income households. The low percentage of insured households are – self employed (10.6%) and others category (8.2%). Among these households, middle income households dominate more than high income households towards insurance.

As regards the highest level of education, around 38.7 per cent are 'graduates and above' in middle income households and 36.4 per cent are in high income households. Around 30.7 per cent of middle income households and 21.8 per cent of high income households have studied 'up to higher secondary' level of education. About 33 per cent of high income households and 24 per cent of middle income households' education are 'up to secondary level'. The 'illiterate' account for 9.1 per cent in high income and 6.3 per cent in middle income category. This shows that the proportion of illiterate households is slightly higher in high income than middle income households.

It is also observed form Table 4 that in the sample study around 93 per cent are educated. Thus the education influences the households to take insurance. Among the income group, the highest proportion of illiterates is seen in high income category (9.1%).

TYPE OF DWELLING UNIT AND FAMILY

An attempt is made to ascertain the type of dwelling in which the household lives and its ownership. Further, the family type of the household is also ascertained for analysis. A classification of households by ownership of dwelling unit, type of dwelling unit and family type is exhibited in Table 5.

TABLE – 5
Distribution of Households by Ownership of Dwelling Unit, Type of Dwelling Unit and Family Type

Particulars	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Ownership of Dwelling Unit						
Own	105	44.1	26	47.3	131	44.7
Rented	72	30.3	18	32.7	90	30.7
Leased	47	19.7	10	18.2	57	19.5
Others	14	5.9	1	1.8	15	5.1
Type of Dwelling Unit						
Pucca	133	55.9	29	52.7	162	55.3
Semi-Pucca	105	44.1	26	47.3	131	44.7
Others	0	0	0	0	0	0
Family Type						
Nuclear	163	68.5	33	60.0	196	66.9
Joint	75	31.5	22	40.0	97	33.1
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

It is found from Table 5 that a comparatively higher percentage of high income category households (47.3%) own dwelling type in comparison with middle income category (44.1%). Overall, in the study unit around 44.7 per cent of households own dwelling unit. Next to this, rented households account for 30.7 per cent and leased households form 19.5 per cent.

Households living in pucca houses account for 55.9 per cent in middle income category whereas it is 52.7 per cent in high income category. In total, 55.3 per cent lives in pucca houses and 44.7 per cent in semi-pucca houses. It seems that the living conditions of the insured households are better.

The general perception is that people living in joint families are emotionally and financially more secure, and so it makes more sense for people living in nuclear families to have insurance. However, the data from the sample population tells a different story. It can be seen from Table 5 that a higher proportion of households in nuclear family (66.9%) have insurance than the joint family (33.1%).

TYPE OF RATION CARD

The households are categorized by the type of ration card they possess. The type has been classified as Above Poverty Line (APL), Below Poverty Line (BPL) and no card. The distribution is displayed in Table 6.

TABLE – 6
Distribution of Households by Type of Ration Card

Type of Ration Card	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Above Poverty Line	150	63.0	41	74.5	191	65.2
Below Poverty Line	59	24.8	0	0	59	20.1
No Card	29	12.2	14	25.5	43	14.7
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

Table 6 shows the possession of different types of ration card by the sample households. A higher proportion of high income households (74.5%) possess 'Above Poverty Line' cards while comparing with middle income households. Below Poverty Line cards are possessed only by the middle income households in the sample study. Around 25.5 per cent of high income households and 12.2 per cent of middle income households do not possess any cards.

From the above observations, it is concluded that a majority of 65.2 per cent of sample households possess 'Above Poverty Line' cards and 20.1 per cent possess 'Below Poverty Line' cards.

SAVINGS AND EXPENDITURE

The percentage of annual savings and expenditure of the sample households have been attempted by the researcher. This is analyzed by finding out the minimum, maximum and mean. The distribution is shown in Table 7.

TABLE – 7
Households' Average Annual Savings and Expenditure

Particulars	Minimum %	Maximum %	Average %
Average Savings			
Savings	8.00	30.00	14.0375
Average Expenditure			
Food	10.00	30.00	18.9761
Clothing	9.00	15.00	10.9932
Medical (Health)	3.00	8.00	5.1775
Rent and Taxes	10.00	30.00	19.6997
Education	8.00	12.00	9.7679
Entertainment	3.00	6.00	4.3584
Insurance Premiums	3.00	15.00	8.3003
Others	3.00	17.00	8.6894

It can be seen from Table 7 that a minimum of 8 per cent and a maximum of 30 per cent have been saved by the households. The average (i.e. mean) worked out to 14.04 per cent. The minimum and maximum expenditure on various items are – a) Food (10 to 30%), b) Clothing (9 to 15%), c) Medical (3 to 8 %), d) Rent and Taxes (10 to 30%), e) Education (8 to 12%), f) Entertainment (3 to 6%), g) Insurance Premiums (3 to 15%), and h) Others (3 to 17%).

It is noted from Table 7 that the average spending is higher on rent and taxes (19.70%), food (18.98%) and clothing (10.99%) when compared to other items of expenditure. The lowest spending is on entertainment (4.36%) followed by medical (5.18%).

REASONS FOR DEBT

An observation regarding the debt position of the households and the reasons for that has been made. Out of the total of 238 middle income households, a vast majority of 197 households constituting 88.77 per cent have debt. In high income category, out of 55 sample households 39 households constituting 70.91 per cent have debt in the sample study. The reason for having debt is gathered from households and the same is exhibited in Table 8.

TABLE – 8
Distribution of Households by Reasons for Debt

Reasons	Number and Percentage of Sample Households					
	Middle Income		**High Income**		**Total**	
	No.	%	No.	%	No.	%
Children's Education	11	5.6	5	12.8	16	6.8
Construction of House	154	78.2	26	66.7	180	76.3
Medical Treatment	8	4.1	1	2.6	9	3.8
Wedding in Family	6	3.0	0	0	6	2.5
Emergency Needs	13	6.6	4	10.2	17	7.2
Others	5	2.5	3	7.7	8	3.4
Total	**197**	**100.0**	**39**	**100.0**	**236**	**100.0**

It is found from Table 8 that a major portion of households (76.3%) reported having debt for construction of house. Next to this, around 7.2 per cent have borrowed money for emergency needs; following this 6.8 per cent reported having debt due to children's education.

Regarding income-wise distribution, 78.2 per cent of middle income households borrowed money for construction of house where it is 66.7 per cent in high income households. The reason for debt 'emergency needs' and 'children's education' account for 6.6 per cent and 5.6 per cent in middle income segment. But it is 10.2 per cent and 12.8 per cent in high income segment. No high income household borrowed money for wedding in their family.

From the above, it is understood that due to the construction of houses by the households most of them are having debt.

TYPE OF INSURANCE HELD

The distribution of households by type of insurance held is depicted in Table 9.

TABLE – 9
Distribution of Households by Type of Insurance Taken

Type of Insurance Held	Ranking by Sample Households					
	Middle Income		High Income		Total	
	No.	Rank	No.	Rank	No.	Rank
Life Insurance	189 (79.4)	II	31 (56.4)	II	220 (75.1)	II
Health Insurance	238 (100.0)	I	55 (100.0)	I	293 (100.0)	I
Motor Insurance	164 (68.9)	III	28 (50.9)	III	192 (65.5)	III
Accident Insurance	92 (38.7)	IV	7 (12.7)	IV	99 (33.8)	IV
Property Insurance	0 (0.0)	-	1 (1.8)	VI	1 (0,3)	VI
Fire Insurance	6 (2.5)	V	4 (7.3)	V	10 (3.4)	V
Total Sample Households	238		55		293	

(Figures in parenthesis indicate percentage)

It is evident from Table 9 that all the sample respondents have health insurance in this study and hence it is positioned in the first position. It is noteworthy that out of 238 middle income households, 189 households constituting 79.4 per cent have life insurance. It is 56.4 per cent in high income segment. Overall 75.1 per cent households have life insurance in addition to health insurance. Hence, it is placed in the second rank. The third rank is assigned to 'motor insurance' by both the middle and high income households. Accident insurance and fire insurance are placed in the fourth and the fifth ranks respectively. Property insurance is held only by one of the high income household in the sample study and a meagre per cent (i.e. 1.8) is accounted for this. So, the last rank (i.e. sixth rank) is given to this type of insurance.

From the observation it is concluded that a higher proportion of life insurance is held by the sample households in addition to the health insurance. This proportion is higher in middle income than the high income segment. Following this, a major portion of households have taken motor insurance in the sample unit.

DETAILS OF POLICIES HELD BY MEMBERS OF HOUSEHOLDS

The survey collected shows detailed information about the insurance policies held by different members of the households like whether they have taken the insurance cover from government or private companies, the amount of annual premium paid, amount insured, etc. All these details are analyzed in this part.

Proportion of Policyholders:

Table 10 provides information about the proportion of household members having life insurance, health insurance and general insurance under both public (i.e. government) and private sectors, based on their income categories. As more than one member from the same household can opt for insurance, the table shows the number of members and not the number of households.

TABLE – 10
Distribution of Household Members with Insurance

Insurance Category	No. of Members Insured					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Life Insurance – Govt.	209	92.1	18	7.9	227	100.0
Life Insurance – Private	43	62.3	26	37.7	69	100.0
Health Insurance – Govt.	264	78.6	72	21.4	336	100.0
Health Insurance - Private	32	60.4	21	39.6	53	100.0
General Insurance – Govt.	114	87.0	17	13.0	131	100.0
General Insurance - Private	52	86.7	8	13.3	60	100.0

While examining the Table 10 it is found that the insurance in government sector shows a higher proportion in life (92.1%) and health insurance (78.6%) than the private sector in middle income segment. But in high income segment, it is just reversed, i.e. private sector dominates more than the public sector. In both income segments, the percentage of members insured in general insurance under public and private sectors have comparatively an equal proportion.

Gender-wise Distribution of Policyholders:

      The details of insurance policies held by members of households have been classified based on gender. The distribution of policyholders by gender is shown in Table 11.

TABLE – 11
Distribution of Policyholders by Gender

Insurance Category	No. of Members Insured					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Life Insurance – Govt.	193	85.0	34	15.0	227	100.0
Life Insurance – Private	48	69.6	21	30.4	69	100.0
Health Insurance – Govt.	273	81.3	63	18.7	336	100.0
Health Insurance - Private	35	66.0	18	34.0	53	100.0
General Insurance – Govt.	102	77.9	29	22.1	131	100.0
General Insurance - Private	53	88.3	7	11.7	60	100.0

      It can be seen from Table 11 that while comparing the government and private insurance category, a higher proportion of male member is insured with government life and health insurance. But in case of general insurance, more male members are insured with private insurance sector. It is just reversed in the case of female insured members in the households. The details of insured female are – life insurance – government (15%), private (30.4%); health insurance – government (18.7%), private (34%); general insurance – government (22.1%), private (11.7%). It is observed that the views in respect of male and female are differ with regard to insurance policy.

Average Annual Insurance Premium:

      The minimum, maximum and average annual insurance premium paid by the members of households for all the three categories of insurance is given in Table 12.

TABLE – 12
Average Annual Insurance Premium Paid

Particulars	Minimum (Rs.)	Maximum (Rs.)	Average (Rs.)
Life Insurance – Govt.	1,025	82,000	16,382
Life Insurance – Private	1,200	58,000	11,226
Health Insurance – Govt.	3,600	14,000	6,894
Health Insurance - Private	3,200	13,500	5,291
General Insurance – Govt.	800	4,000	1,489
General Insurance - Private	850	5,400	1,513

      It is found from Table 12 that the minimum and maximum insurance premium paid by the members of households for different categories of insurance are – Life insurance (Govt.) Rs.1,025 and Rs.82,000; Life insurance (Private) Rs.1,200 and Rs.58,000; Health insurance (Govt.) Rs.3,600 and Rs.14,000; Health insurance (Private) Rs.3,200 and Rs.13,500; General insurance (Govt.) Rs.800 and Rs.4,000; and General insurance (Private) Rs. 850 and Rs.5,400. From this it seems that in minimum category a higher proportion is paid for private life insurance and general insurance. But in health insurance, a higher proportion is paid for the government health insurance.

      The average annual premium paid by the members of households for government life insurance is Rs.16,382 whereas it is Rs.11,226 in private life insurance. In case of health insurance it is Rs.6,894 for government sector and Rs.5,291 for private sector. The premium paid towards government sector is higher in case of life insurance and health insurance but it is low for general insurance.

      From Table 12 it is understood that most of members of households preferred the government sector insurance than the private sector for life and health.

MAJOR SOURCES OF INFORMATION

An attempt is made to analyze the major sources of information regarding insurance. The result of analysis is presented in Table 13.

TABLE – 13
Distribution of Households by Major Sources of Information

Sources	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Newspapers/Magazines	12	5.0	4	7.3	16	5.5
Radio	9	3.8	0	0.0	9	3.1
Television	10	4.2	2	3.6	12	4.1
Internet	13	5.5	3	5.5	16	5.5
Agents	129	54.2	27	49.1	156	53.2
Relatives and Friends	28	11.8	11	20.0	39	13.3
Neighbours and Colleagues	14	5.9	6	10.9	20	6.8
Others	6	2.5	0	0.0	6	2.0
None	17	7.1	2	3.6	19	6.5
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

It is observed from Table 13 that the 'agents' is the main source of information for both the middle and high income households and it accounts by 54.2 per cent and 49.1 per cent respectively. Following this, relatives and friends who exchange information in the middle income households work out to 11.8 per cent and it is 20 per cent in high income households. The source 'relatives and friends' enjoyed a higher proportion in high income segment. Next to this, 'neighbours and colleagues' accounted for 5.9 per cent and 10.9 per cent by the middle and high income households respectively. The other sources come in order.

The overall analysis shows that 'agents' is the main source of information (53.2%), followed by relatives and friends (13.3%) who exchange news. The other major sources of information are neighbours and colleagues (6.8%), internet (5.5%) and newspapers/magazines (5.5%). It is evident from the analysis that around 6.5 per cent of households are not influenced by any sources.

HEALTH INSURANCE – SIMILAR TO SAVINGS

A question has been asked to the sample households to express their opinion whether the health insurance is similar to thrift/savings or not. The opinion is different from one household to another. The sample households' opinions are illustrated in Table 14.

TABLE – 14
Opinion of Households towards Health Insurance Similar to Savings

Opinion	Number and Percentage of Sample Households					
	Middle Income		High Income		Total	
	No.	%	No.	%	No.	%
Yes	45	18.9	12	21.8	57	19.5
No	193	81.1	43	78.2	236	80.5
Total	**238**	**100.0**	**55**	**100.0**	**293**	**100.0**

From Table 14 it is understood that out of 293 sample households, 236 households constituting 80.5 per cent expressed that health insurance is not similar to thrift or savings and the remaining 57 households constituting 19.5 per cent have treated health insurance as similar to savings. About 21.8 per cent of high income households have thought that the health insurance is similar to savings but it is 18.9 per cent in middle income households. It is observed from the study that majority of households know that the health insurance is not similar to savings.

FINDINGS

The following are the important findings of the study.

1. In this study, middle income households accounts for 81.23 per cent and high income accounts for 18.77 per cent.
2. Majority of the households (75.8%) were male and around one-fourth was female.
3. It is evident from the study that a high percentage of the insured households are – a) government service to the extent of 31.3 per cent; b) private service accounts for 25.9 per cent; and c) business or profession to the tune of 23.5 per cent. Among these households, middle income households dominate more than high income households towards insurance.
4. All the sample respondents have health insurance in this study and hence it is positioned in the first position. It is noteworthy that out of 238 middle income households, 189 households constituting 79.4 per cent have life insurance. It is 56.4 per cent in high income segment. Overall 75.1 per cent households have life insurance in addition to health insurance. Hence, it is placed in the second rank.
5. It is found that the insurance in government sector shows a higher proportion in life (92.1%) and health insurance (78.6%) than the private sector in middle income segment.
6. The source 'agents' is the main source of information for both the middle and high income households and it accounts by 54.2 per cent and 49.1 per cent respectively.

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FACTORS INFLUENCING ENTREPRENEURS' ATTITUDE TOWARDS FINANCIAL INSTITUTIONS

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ABSTRACT

    Small-Scale Industries (SSI) have been playing a pivotal role in India's industrial and economic development. Many units have made significant contributions to the development of rural and backward areas. But the small-scale industries are confronted with problems such as paucity of finance, difficulties in procuring raw-material and in marketing and obsolete and out-dated technology. Lack of finance is one of the major obstacles in the development of small-scale units. Since most of the SSI units are either partnership firms or sole proprietary concerns, their internal resources are inadequate to meet their requirements. Despite the liberal credit provided by the institutional agencies to the SSI sector in recent years, the problem of finance still exists. This study attempts to highlights the factors which influences entrepreneurs' attitude towards financial institutions.

KEY WORDS

Attitude, Economic Development, Entrepreneurs, Financial Institutions, Influencing Factors, Small and Tiny Enterprises, and Small-Scale Industries

INTRODUCTION

    India is a developing country. It has abundant physical, natural and biological resources. It is a country with heterogeneous agro climatic regions. Its economy is very strong with adequate foreign exchange reserves. Though the economy is not self-reliant, it has attained self-sufficiency in food grain production. Despite all these achievements, rapid increase in the rate of growth of population poses a serious threat to her economic development. Growing population is the main cause for unemployment. The government has to provide enough employment to uplift the standard of living of the people. But it is not possible to give wage employment to all by the government. Therefore, people must be encouraged to engage themselves in self-employment activities.

    In the present context of mounting unemployment and squeeze in government jobs, entrepreneurship is gaining more significance. The importance of promoting and developing the first generation entrepreneurs is increasing day-by-day in all developing countries. It has been realized by planners in these countries that establishment of small and tiny enterprises, which have more employment potential, can tackle the acute problem of growing unemployment. Moreover, the development of entrepreneurship, especially among the rural / tribal population, is imperative for a country embarking on small industry development programmes. In particular, the spirit of entrepreneurship is to be developed among the educated youth. The entrepreneurial spirit involves not only a desire to gain monetary benefit but also an admixture of a high need for achievement and all the motivation evident in a high achiever. Long-term involvement with a goal, which the entrepreneur sets for himself, creates the need to persist with the undertaking even in the face of difficulties and hardships.

    A significant feature of Indian economy since Independence is the rapid growth of small-scale industry sector. Lack of finance is one of the major obstacles in the development of small-scale units. The internal resources of the SSI units are inadequate to meet their requirements. Despite the liberal credit provided by the institutional agencies to the SSI sector in recent years, the problem of finance still exists.

    In order to accelerate the small industries development, Government at the Central and State levels have set up a number of development agencies/institutions such as District Industries Centres (DICs), Small Industries Service Institutes (SISIs) and Small Industries Development Organizations. All India Financial Institutions – IDBI, IFCI, ICICI – have promoted a number of Technical Consultancy Organizations (TCOs) to assist small entrepreneurs in different ways. The Small Industries Development Fund was set up by the IDIBI in 1986 in order to assist small-scale, village and cottage industries and tiny sector units in the rural areas. The Small Industries Development Bank of India (SIDBI) was established to assist small-scale units. In addition to these

institutions there are agencies like National Science and Technology Entrepreneurship Board, Khadi and Village Industries Commission, Commercial Banks, EXIM Bank and Co-operative Banks which undertake promotional activities aiming at facilitating industrial development.

REVIEW OF LITERATURE

At the early stage of the present exercise, a review of relevant literatures was undertaken to understand what has already been done by expert committees and researchers in the sphere of small-scale industries, development of SSI units, and the various institutional arrangements for the promotion of small-scale industries. Some of them are listed below:

Khan, A.V. and Zaguallah Shaikh (2001) in their article, "Financing of Small-Scale Industries in Maharashtra" observed that the financial and management base of SFCs might be suitably strengthened to enable them to provide better services to SSI sector. Banks and financial institutions could concentrate upon the cluster approach and set up specialized branches in such clusters of SSI concentrations. Nagammai, R.M. (2001) conducted a study to find out the input of TIIC and DICs on the growth of SSI units and to identify and analyze the new challenge for SSI sector. Uma, S. (2001) in her research titled "Problems and Prospects of Priority Lending By Commercial Banks – A Case Study of Small Scale Industries in Bangalore District" notes that improper planning, non-availability of adequate funds for working capital, diversion or misutilization of funds by the beneficiaries, non-availability or high priced raw materials, rejection of the products by customers, under-utilization of the installed capacity, delayed payment from customers, competition and other problems of marketing are the factors responsible for low profitability or loss. Sundar, K., Kumal Gandhi, K. and Gangatharan, G. (2002) in their article, "The Role of Small Industries Development Bank of India (SIDBI) in Financing SSI Units" attempted to analyze the role of SIDBI in providing financial assistance and observed that SIDBI's role was commendable both in terms of number of schemes sanctioned and the quantum of loans disbursed over a period of eight years. The bank was mainly financing SSI through refinance and bill financing schemes. The SIDBI, they pointed out, should widen its horizon of loan assistance to cater to the diverse credit requirements of SSI units. It should intensify its lending activities into the areas of equity assistance, project-related finance and support to institutions engaged in promoting SSIs. Rajendran, R. (2003) in his study titled "The Role of Tamil Nadu Industrial Investment Corporation (TIIC) in the development of SSI in Tamil Nadu" discussed the various loan schemes provided by TIIC exclusively for SSI and the role played by TIIC in the development of SSI units in Tamil Nadu. Syed Vazith Hussain (2004) in his article "Performance of Small-Scale Industries in India and the Challenges Ahead" focussed the position and performance of small-scale industries in India in terms of growth of number of units, value of production, number of persons employed and value of export during the last decade. He had also analysed the impact of WTO in the development of SSI sector and offered a few recommendations to the government for the development of SSI sectors in India. Rahavalu, M.V. (2005) in his article titled "Performance of Small-Scale Industrial Units in the Indian Economy" discussed the performance of SSI sector in the Indian Economy. Details about the growth of number of units of SSI in Karnataka State, its value of production, employment generated and value of exports from 1960-61 to 2003-04 were also provided. The study also examined the performance of SSI units in the State of Karnataka and covered the problems and prospects of SSI units.

Srikumar and Jayalakshmi (2006) in their study show that the reforms in the finance sector have snatched the benefits of lower interest rates, credit guarantee schemes, and priority sector lending. Valasamma Antony (2007) in her article "Small-Scale Sector at Crossroads: An Overview" reviewed the role of SSI sector in the Indian economy. She had discussed the problems of SSI sector relating to financial, industrial sickness and incipient sickness and also provided a few important various suggestions to the government in removing the sickness among SSI units. Basem M. Lozi (2008) has identified in his survey that Marketing is one of the major problem areas of the small scale industries and it has been ranked as the second most important reason for the closure of small scale businesses.   Abdul-Azeez Ibraheem Adegoke (2010) states that gender, age and educational qualification have a significant influence on the performance of the selected small-scale enterprises in the study area in Nigeria. The paper suggests an integrated approach to the development of individual entrepreneurial capacity and promotion of sustainable small-scale enterprises. Mounika, GS (2017) in her article stated that over the past six decades the small scale industries sector has been highly vibrant and dynamic. It has acquired a prominent place in the socio-economic development of the country. It is a well recognized fact that a vibrant small-scale sector holds the key to economic prosperity in an economy like India. However, SSI has been facing multiple problems, which make them uncompetitive and sick. In such a context, the paper attempts to highlight the importance of SSI in Indian economy. Charvi Jain and Roshita Jain (2019) in a research paper attempted to analyze the impact of SSI's on the country's economy. The paper also explores the current and future SSI potential and in this study authors analyzes the awareness level of respondents (employees) about the SSIs and especially SSI's need and importance in the development in Rajasthan, their importance and impact on economy. From the above studies, it is found that there is a research gap exists and hence this study has been carried out.

STATEMENT OF THE PROBLEM

Rapid increase in the rate of growth of population in India is a threat to economic development. It is one of the causes of unemployment. The Government has to provide necessary employment to increase the standard of living of the people. But it is not possible to give employment to all. Self-employment is the only alternative. People must venture into entrepreneurship to increase their income. Most of the people in India, especially those who are engaged in agriculture, are affected by drought and disguised unemployment. They must be encouraged to start business ventures to protect themselves from poverty. In India, the promotion of small-scale industries has continued to be an important element in the national development strategy, particularly because of their very favourable capital-output ratio and high employment intensity.   In the post-independence period, the governments at the Centre and the State have established a number of specialized institutions and have offered special growth and performance-oriented concessions and facilities to cater to the varied needs of small scale units. Though the promotional institutions assist in setting up small units, the SSI sector is facing heavy competition both in the domestic and international markets. In addition, the new industrial policy also hampered its sustained growth. This influences the researcher to make an attempt which factors influences entrepreneurs' attitudes towards financial institutions.

OBJECTIVE OF THE STUDY

The main objective of the study is to highlights the factors which influences entrepreneurs' attitude towards financial institutions.

METHODOLOGY

The present study is based on both primary and secondary data. Primary data have been collected by conducting a survey among 200 sample entrepreneurs of small-scale industrial units in Madurai District. In order to analyze the factors which influence entrepreneurs in getting financial assistance from commercial banks, a survey was conducted among 200 sample units by using a structured interview schedule. Random sampling technique was used in selecting sample units by using lottery method. A pre-test was conducted among 20 entrepreneurs to analyze the effectiveness of the interview schedule. It was modified on the basis of the pre-test and the data were collected from 200 sample SSI units consisting of various types of units viz. wood product unit, chemical product unit, paper and printing unit, hosiery garment unit, food product uunit, cotton textile unit, rubber and plastic product unit, and metal product unit. Secondary data have been collected from books, journals, newspapers, periodicals, reports and unpublished theses.

ANALYSIS AND INTERPRETATION

FACTORS INFLUENCING ENTREPRENEURS ATTITUDE

An attempt has been made to identify the factors which influence the entrepreneurs towards financial institutions assisting SSI units. For this, 12 statements relating to entrepreneurs attitude have been selected so as to identify the significant and important dimensions with the help of factor analytical technique.

Analytical Framework:

The technique adopted to identify and analyze the factors influencing the overall entrepreneurs' attitude is factor analysis. The principal factor analysis method is mathematically satisfying because it yields a unique solution to a factor problem. Its major solution feature is the extraction of maximum amount of variation as each factor is calculated. In other words, the first extracts the most variance and so on. Most of the analytical methods produce results in a form that is difficult or impossible to interpret. Thurstone argued that it was necessary to rotate factor matrices if one wanted to interpret them adequately. He pointed out that original factor matrices are arbitrary in the sense that an infinite number of reference frames (axes) can be found to reproduce any given 'R' matrix.

There are several methods available for factor analysis. But the principle factor method with orthogonal variance rotation is mostly used and widely available in factor analysis computer programme.   Further orthogonal rotations maintain the independence of factors, that is, the angles between the axes are kept at 90 degrees. One of the final outcomes of a factor analysis is called rotated factor matrix, a table of co-efficient that expresses the ratios between the variable and the factors that have been prepared. The sum of squares of the factor loadings of variable is called communalities (h^2).   The communality (h^2) of a factor is its common factor variance. The factors with factor loadings of 0.5 or greater are considered as significant factors. This limit is chosen because it had been judged that factors with less than 50 per cent common variation with the rotated factor pattern are too weak to report.

In the present study, the principal factor analysis method with orthogonal varimax rotation is used to identify the factors influencing the overall entrepreneurs' opinion towards financial institution assisting SSI units in the study area.

Testing for Sampling Adequacy:

Before extracting the factors, to test the appropriateness of the factor model, Bartlett's test of Sphericity was used to test the null hypothesis that the variables are intercorrelated in population. The test statistics of Sphericity is based on a chi-square transformation of the determinant of the correlation matrix.   Another useful statistics is the Kaiser-Meyer Olkin (KMO) test of sampling adequacy. Small value of the KMO statistic indicates that the correlation between parts of variable cannot be explained by other variables and that factor analysis may not be appropriate. Generally, a value greater than 0.5, is desirable.

The correlation matrix was examined carefully and the two tests namely Bartlett's test of Sphericity and Kaiser-Meyer Olkin test were undertaken to test if it was judicious to proceed with factor analysis in the present study. The computed results are given in Table 1.

Table 1
Measures of Sampling Inadequacies

Measures	Estimated Value
Kaiser-Meyer Olkin Measure of Sampling Adequacy	0.65674
Bartlett's Test of Sphericity	374.69108
Significance	0.0000

From Table 1 it has been observed that the Bartlett's test was significant with P = 0.000, being less than 0.05. Sampling adequacy measured using the Kaiser-Mayer Olkin (KMO) of 0.65674 was taken as acceptable. Thus the factor analysis may be considered an appropriate technique for analyzing the data.

Factor analysis was done with 12 variables (item) by Orthogonal Varimax Rotation for the opinion of the entrepreneurs towards the overall attitude on financial institutions assisting SSI units in the study area.

The rotated factor matrix for the variables relating to the overall opinion of entrepreneurs on financial institutions assisting SSI units in the study is given in Table 2.

Table 2
Rotated Factor Matrix for Overall Opinion of Entrepreneurs towards
Financial Institutions assisting SSI Units in Madurai District

Sl. No.	Variables	Rotated Factor Loadings					(h²)
		F1	F2	F3	F4	F5	
1.	The repayment schedule for the loan is reasonable.	**.653**	.254	-.071	-.222	.086	.650
2.	The repayment schedule is fixed in consultation with the borrowers.	**.636**	-.126	.180	.439	-.060	.510
3.	Preferential treatment is given to entrepreneurs who are prompt in repaying the loans.	**.612**	.182	.161	.076	-.068	.736
4.	The moratorium period for repayment of loan is reasonable	**.600**	-.078	-.198	.257	.350	.650
5.	The banks' loan application carries adequate provisions to collect needed information for grating loans.	.095	**.810**	-017	.153	.053	.583
6.	The bank officials make frequent visits to the SSI units.	.112	**.694**	-.083	-.029	-.145	.596
7.	The rate of interest charged on the bank loan is reasonable.	.169	-.015	**.787**	-.021	-.029	.256
8.	The margin fixed by the bank is reasonable.	.130	-.060	**.686**	.224	.200	.506
9.	The bank's service charges are reasonable.	.450	.014	**-.500**	.262	-.142	.554
10.	The bank takes the minimum time to sanction the loan.	-.057	.127	.023	**.828**	-.054	.524
11.	The loan amount sanctioned is adequate.	.295	.132	.151	.093	**.686**	.693
12.	The banks are friendly to entrepreneurs and provide advice on financial matters.	.180	.229	-.099	.309	**-.564**	.445
	Eigen value	**3.11**	**1.70**	**1.43**	**1.20**	**1.11**	
	Percentage of variance	**20.8**	**11.3**	**9.6**	**8.0**	**7.4**	
	Cumulative percentage of variance	**20.8**	**32.1**	**41.6**	**49.7**	**57.1**	

Table 2 exhibits the rotated factor loadings for the twelve statements (variables) related to the opinion of entrepreneurs on the financial institutions assisting SSI units. It is observed from Table 6.21 that all the twelve statements have been extracted into five factors. These five factors have been named properly on the basis of variables loaded and the communality values for each variable are given in factor-wise tables from 3 to 7.

Table 3
Factor 1 – Repayment of Loan

Sl. No.	Variables	Factor Loading	Communality (h²)
1.	The repayment schedule for the loan is reasonable.	0.653	0.650
2.	The repayment schedule is fixed in consultation with the borrowers.	0.636	0.510
3.	Preferential treatment is given to entrepreneurs who are prompt in repaying the loans.	0.612	0.736
4.	The moratorium period for repayment of loan is reasonable	0.600	0.650

The first factor is narrated as **"Repayment of Loan"** on the basis of loaded variables. In this factor, four variables such as – a) the repayment schedule for the loan is reasonable; b) the repayment schedule is fixed in consultation with the borrowers; c) preferential treatment is given to entrepreneurs who are prompt in repaying the loans; and d) the moratorium period for repayment of loan is reasonable – are loaded with 0.653, 0.636, 0.612 and 0.600 respectively and shown in Table 3. These four variables have high communality indicating that variables within the Factor 1 have very high association among them.

All the variables have high communality, indicating that the variables within Factor 1 have very high association. The Eigen value and the percentage of variance explained is 3.11 and 20.8 respectively. Thus, the 'Repayment of Loan' factor is identified as one of the important factors influencing the entrepreneurs on the financial institutions assisting SSI units.

Table 4
Factor 2 – Formalities

Sl. No.	Variables	Factor Loading	Communality (h²)
1.	The banks' loan application carries adequate provisions to collect needed information for grating loans.	0.810	0.583
2.	The bank officials make frequent visits to the SSI units.	0.694	0.596

The second factor is identified as **"Formalities"** on the basis of loaded variables. The variables included in this factor are given in Table 4. It indicates that among the variables, 'the bank's loan application carries adequate provisions to collect needed information for grating loans', and 'the bank officials make frequent visits to the SSI units' are important variables in this category. The higher factor loading on its variables helps in identifying variables associated with Factor 2.

The total variance explained by way of Eigen value to this factor is 1.70 and the percentage of variance accounted for 11.3. The formalities adopted by the financial institutions are considered as an important factor in influencing the entrepreneurs' opinion in assisting SSI units.

Table 5
Factor 3 – Reasonable Charges

Sl. No.	Variables	Factor Loading	Communality (h²)
1.	The rate of interest charged on the bank loan is reasonable.	0.787	0.256
2.	The margin fixed by the bank is reasonable.	0.686	0.506
3.	The bank's service charges are reasonable.	-0.500	0.554

Table 5 indicates the third factor which is named as **"Reasonable Charges"** based on variables loaded on it. The variables, viz. 'the rate of interested charged on the bank loan is reasonable' with 0.787 factor loading with a communality value of 0.256, and 'the margin fixed by the bank is reasonable' with 0.686 factor loading with communality value of 0.506 have a positive loading on Factor 3. But, 'the bank's service charges are reasonable' has a negative factor loading of -0.500 with communality value of 0.554. The extracted Eigen value is 1.43 and the percentage of variance explained in this factor is 9.6. It indicates that these variables have high association among them.

Table 6
Factor 4 – Minimum Time

Sl. No.	Variables	Factor Loading	Communality (h²)
1.	The bank takes the minimum time to sanction the loan.	0.828	0.524

The fourth factor has been identified as **"Minimum Time"** with one positive variable and it is exhibited in Table 6. The factor 'the bank takes the minimum time to sanction the loan' has been accounted for 0.828 with factor loading. The communality value for this variable is 0.524. It indicates that higher amount of variance is explained by the extracted factors. The total variance explained is given in the form of Eigen value. It is 1.20 for the fourth factor. It accounted for 8.0 percentage of variance.

Table 7
Factor 5 – Adequate Loan

Sl. No.	Variables	Factor Loading	Communality (h²)
1.	The loan amount sanctioned is adequate.	0.686	0.693
2.	The banks are friendly to entrepreneurs and provide advice on financial matters.	-0.564	0.445

The fifth factor is designed as **"Adequate Loan"** on the basis of loaded variables. Two variables such as 'the loan amount sanctioned is adequate' and 'the banks are friendly to entrepreneurs and provide advice on financial matters' are loaded with 0.686 and 0.564 respectively and shown in Table 7. These two variables have some communality indicating that variables within the Factor 5 have high association among them.

The Eigen value and the percentage of variance explained is 1.11 and 7.4 respectively. Thus, the factor 'adequate loan' is identified as one of the important factors influencing the entrepreneurs on financial institutions assisting SSI units.

FINDINGS

It is inferred from the study that the factors viz. a) Repament of Loan, b) Formalities, c) Reasonable Charges, d) Minimum Time, and e) Adequate Loan, are identified as the main factors which influence the opinion of entrepreneurs on the financial institutions assisting SSI units in Madurai district.

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FACTORS INFLUENCING ENTREPRENEURS' ATTITUDE TOWARDS FINANCIAL INSTITUTIONS

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ABSTRACT

    Small-Scale Industries (SSI) have been playing a pivotal role in India's industrial and economic development. Many units have made significant contributions to the development of rural and backward areas. But the small-scale industries are confronted with problems such as paucity of finance, difficulties in procuring raw-material and in marketing and obsolete and out-dated technology. Lack of finance is one of the major obstacles in the development of small-scale units. Since most of the SSI units are either partnership firms or sole proprietary concerns, their internal resources are inadequate to meet their requirements. Despite the liberal credit provided by the institutional agencies to the SSI sector in recent years, the problem of finance still exists. This study attempts to highlights the factors which influences entrepreneurs' attitude towards financial institutions.

INTRODUCTION

    India is a developing country. It has abundant physical, natural and biological resources. It is a country with heterogeneous agro climatic regions. Its economy is very strong with adequate foreign exchange reserves. Though the economy is not self-reliant, it has attained self-sufficiency in food grain production. Despite all these achievements, rapid increase in the rate of growth of population poses a serious threat to her economic development. Growing population is the main cause for unemployment. The government has to provide enough employment to uplift the standard of living of the people. But it is not possible to give wage employment to all by the government. Therefore, people must be encouraged to engage themselves in self-employment activities.

    In the present context of mounting unemployment and squeeze in government jobs, entrepreneurship is gaining more significance. The importance of promoting and developing the first generation entrepreneurs is increasing day-by-day in all developing countries. It has been realized by planners in these countries that establishment of small and tiny enterprises, which have more employment potential, can tackle the acute problem of growing unemployment. Moreover, the development of entrepreneurship, especially among the rural / tribal population, is imperative for a country embarking on small industry development programmes. In particular, the spirit of entrepreneurship is to be developed among the educated youth. The entrepreneurial spirit involves not only a desire to gain monetary benefit but also an admixture of a high need for achievement and all the motivation evident in a high achiever. Long-term involvement with a goal, which the entrepreneur sets for himself, creates the need to persist with the undertaking even in the face of difficulties and hardships.

    A significant feature of Indian economy since Independence is the rapid growth of small-scale industry sector. Lack of finance is one of the major obstacles in the development of small-scale units. The internal resources of the SSI units are inadequate to meet their requirements. Despite the liberal credit provided by the institutional agencies to the SSI sector in recent years, the problem of finance still exists.

    In order to accelerate the small industries development, Government at the Central and State levels have set up a number of development agencies/institutions such as District Industries Centres (DICs), Small Industries Service Institutes (SISIs) and Small Industries Development Organizations. All India Financial Institutions – IDBI, IFCI, ICICI – have promoted a number of Technical Consultancy Organizations (TCOs) to assist small entrepreneurs in different ways. The Small Industries Development Fund was set up by the IDIBI in 1986 in order to assist small-scale, village and cottage industries and tiny sector units in the rural areas. The Small Industries Development Bank of India (SIDBI) was established to assist small-scale units. In addition to these

institutions there are agencies like National Science and Technology Entrepreneurship Board, Khadi and Village Industries Commission, Commercial Banks, EXIM Bank and Co-operative Banks which undertake promotional activities aiming at facilitating industrial development.

REVIEW OF LITERATURE

At the early stage of the present exercise, a review of relevant literatures was undertaken to understand what has already been done by expert committees and researchers in the sphere of small-scale industries, development of SSI units, and the various institutional arrangements for the promotion of small-scale industries. Some of them are listed below:

Khan, A.V. and Zaguallah Shaikh (2001) in their article, "Financing of Small-Scale Industries in Maharashtra" observed that the financial and management base of SFCs might be suitably strengthened to enable them to provide better services to SSI sector. Banks and financial institutions could concentrate upon the cluster approach and set up specialized branches in such clusters of SSI concentrations. Nagammai, R.M. (2001) conducted a study to find out the input of TIIC and DICs on the growth of SSI units and to identify and analyze the new challenge for SSI sector. Uma, S. (2001) in her research titled "Problems and Prospects of Priority Lending By Commercial Banks – A Case Study of Small Scale Industries in Bangalore District" notes that improper planning, non-availability of adequate funds for working capital, diversion or misutilization of funds by the beneficiaries, non-availability or high priced raw materials, rejection of the products by customers, under-utilization of the installed capacity, delayed payment from customers, competition and other problems of marketing are the factors responsible for low profitability or loss. Sundar, K., Kumal Gandhi, K. and Gangatharan, G. (2002) in their article, "The Role of Small Industries Development Bank of India (SIDBI) in Financing SSI Units" attempted to analyze the role of SIDBI in providing financial assistance and observed that SIDBI's role was commendable both in terms of number of schemes sanctioned and the quantum of loans disbursed over a period of eight years. The bank was mainly financing SSI through refinance and bill financing schemes. The SIDBI, they pointed out, should widen its horizon of loan assistance to cater to the diverse credit requirements of SSI units. It should intensify its lending activities into the areas of equity assistance, project-related finance and support to institutions engaged in promoting SSIs. Rajendran, R. (2003) in his study titled "The Role of Tamil Nadu Industrial Investment Corporation (TIIC) in the development of SSI in Tamil Nadu" discussed the various loan schemes provided by TIIC exclusively for SSI and the role played by TIIC in the development of SSI units in Tamil Nadu. Syed Vazith Hussain (2004) in his article "Performance of Small-Scale Industries in India and the Challenges Ahead" focussed the position and performance of small-scale industries in India in terms of growth of number of units, value of production, number of persons employed and value of export during the last decade. He had also analysed the impact of WTO in the development of SSI sector and offered a few recommendations to the government for the development of SSI sectors in India. Rahavalu, M.V. (2005) in his article titled "Performance of Small-Scale Industrial Units in the Indian Economy" discussed the performance of SSI sector in the Indian Economy. Details about the growth of number of units of SSI in Karnataka State, its value of production, employment generated and value of exports from 1960-61 to 2003-04 were also provided. The study also examined the performance of SSI units in the State of Karnataka and covered the problems and prospects of SSI units.

Srikumar and Jayalakshmi (2006) in their study show that the reforms in the finance sector have snatched the benefits of lower interest rates, credit guarantee schemes, and priority sector lending. Valasamma Antony (2007) in her article "Small-Scale Sector at Crossroads: An Overview" reviewed the role of SSI sector in the Indian economy. She had discussed the problems of SSI sector relating to financial, industrial sickness and incipient sickness and also provided a few important various suggestions to the government in removing the sickness among SSI units. Basem M. Lozi (2008) has identified in his survey that Marketing is one of the major problem areas of the small scale industries and it has been ranked as the second most important reason for the closure of small scale businesses.   Abdul-Azeez Ibraheem Adegoke (2010) states that gender, age and educational qualification have a significant influence on the performance of the selected small-scale enterprises in the study area in Nigeria. The paper suggests an integrated approach to the development of individual entrepreneurial capacity and promotion of sustainable small-scale enterprises. Mounika, GS (2017) in her article stated that over the past six decades the small scale industries sector has been highly vibrant and dynamic. It has acquired a prominent place in the socio-economic development of the country. It is a well recognized fact that a vibrant small-scale sector holds the key to economic prosperity in an economy like India. However, SSI has been facing multiple problems, which make them uncompetitive and sick. In such a context, the paper attempts to highlight the importance of SSI in Indian economy. Charvi Jain and Roshita Jain (2019) in a research paper attempted to analyze the impact of SSI's on the country's economy. The paper also explores the current and future SSI potential and in this study authors analyzes the awareness level of respondents (employees) about the SSIs and especially SSI's need and importance in the development in Rajasthan, their importance and impact on economy. From the above studies, it is found that there is a research gap exists and hence this study has been carried out.

STATEMENT OF THE PROBLEM

Rapid increase in the rate of growth of population in India is a threat to economic development. It is one of the causes of unemployment. The Government has to provide necessary employment to increase the standard of living of the people. But it is not possible to give employment to all. Self-employment is the only alternative. People must venture into entrepreneurship to increase their income. Most of the people in India, especially those who are engaged in agriculture, are affected by drought and disguised unemployment. They must be encouraged to start business ventures to protect themselves from poverty. In India, the promotion of small-scale industries has continued to be an important element in the national development strategy, particularly because of their very favourable capital-output ratio and high employment intensity.   In the post-independence period, the governments at the Centre and the State have established a number of specialized institutions and have offered special growth and performance-oriented concessions and facilities to cater to the varied needs of small scale units. Though the promotional institutions assist in setting up small units, the SSI sector is facing heavy competition both in the domestic and international markets. In addition, the new industrial policy also hampered its sustained growth. This influences the researcher to make an attempt which factors influences entrepreneurs' attitudes towards financial institutions.

OBJECTIVE OF THE STUDY

The main objective of the study is to highlights the factors which influences entrepreneurs' attitude towards financial institutions.

METHODOLOGY

The present study is based on both primary and secondary data. Primary data have been collected by conducting a survey among 200 sample entrepreneurs of small-scale industrial units in Madurai District. In order to analyze the factors which influence entrepreneurs in getting financial assistance from commercial banks, a survey was conducted among 200 sample units by using a structured interview schedule. Random sampling technique was used in selecting sample units by using lottery method. A pre-test was conducted among 20 entrepreneurs to analyze the effectiveness of the interview schedule. It was modified on the basis of the pre-test and the data were collected from 200 sample SSI units consisting of various types of units viz. wood product unit, chemical product unit, paper and printing unit, hosiery garment unit, food product uunit, cotton textile unit, rubber and plastic product unit, and metal product unit. Secondary data have been collected from books, journals, newspapers, periodicals, reports and unpublished theses.

ANALYSIS AND INTERPRETATION

FACTORS INFLUENCING ENTREPRENEURS ATTITUDE

An attempt has been made to identify the factors which influence the entrepreneurs towards financial institutions assisting SSI units. For this, 12 statements relating to entrepreneurs attitude have been selected so as to identify the significant and important dimensions with the help of factor analytical technique.

Analytical Framework:

The technique adopted to identify and analyze the factors influencing the overall entrepreneurs' attitude is factor analysis. The principal factor analysis method is mathematically satisfying because it yields a unique solution to a factor problem. Its major solution feature is the extraction of maximum amount of variation as each factor is calculated. In other words, the first extracts the most variance and so on. Most of the analytical methods produce results in a form that is difficult or impossible to interpret. Thurstone argued that it was necessary to rotate factor matrices if one wanted to interpret them adequately. He pointed out that original factor matrices are arbitrary in the sense that an infinite number of reference frames (axes) can be found to reproduce any given 'R' matrix.

There are several methods available for factor analysis. But the principle factor method with orthogonal variance rotation is mostly used and widely available in factor analysis computer programme. Further orthogonal rotations maintain the independence of factors, that is, the angles between the axes are kept at 90 degrees. One of the final outcomes of a factor analysis is called rotated factor matrix, a table of co-efficient that expresses the ratios between the variable and the factors that have been prepared. The sum of squares of the factor loadings of variable is called communalities (h^2). The communality (h^2) of a factor is its common factor variance. The factors with factor loadings of 0.5 or greater are considered as significant factors. This limit is chosen because it had been judged that factors with less than 50 per cent common variation with the rotated factor pattern are too weak to report.

In the present study, the principal factor analysis method with orthogonal varimax rotation is used to identify the factors influencing the overall entrepreneurs' opinion towards financial institution assisting SSI units in the study area.

Testing for Sampling Adequacy:

Before extracting the factors, to test the appropriateness of the factor model, Bartlett's test of Sphericity was used to test the null hypothesis that the variables are intercorrelated in population. The test statistics of Sphericity is based on a chi-square transformation of the determinant of the correlation matrix. Another useful statistics is the Kaiser-Meyer Olkin (KMO) test of sampling adequacy. Small value of the KMO statistic indicates that the correlation between parts of variable cannot be explained by other variables and that factor analysis may not be appropriate. Generally, a value greater than 0.5, is desirable.

The correlation matrix was examined carefully and the two tests namely Bartlett's test of Sphericity and Kaiser-Meyer Olkin test were undertaken to test if it was judicious to proceed with factor analysis in the present study. The computed results are given in Table 1.

Table 1
Measures of Sampling Inadequacies

Measures	Estimated Value
Kaiser-Meyer Olkin Measure of Sampling Adequacy	0.65674
Bartlett's Test of Sphericity	374.69108
Significance	0.0000

From Table 1 it has been observed that the Bartlett's test was significant with P = 0.000, being less than 0.05. Sampling adequacy measured using the Kaiser-Mayer Olkin (KMO) of 0.65674 was taken as acceptable. Thus the factor analysis may be considered an appropriate technique for analyzing the data.

Factor analysis was done with 12 variables (item) by Orthogonal Varimax Rotation for the opinion of the entrepreneurs towards the overall attitude on financial institutions assisting SSI units in the study area.

The rotated factor matrix for the variables relating to the overall opinion of entrepreneurs on financial institutions assisting SSI units in the study is given in Table 2.

Table 2
Rotated Factor Matrix for Overall Opinion of Entrepreneurs towards
Financial Institutions assisting SSI Units in Madurai District

Sl. No.	Variables	Rotated Factor Loadings					(h²)
		F1	F2	F3	F4	F5	
1.	The repayment schedule for the loan is reasonable.	**.653**	.254	-.071	-.222	.086	.650
2.	The repayment schedule is fixed in consultation with the borrowers.	**.636**	-.126	.180	.439	-.060	.510
3.	Preferential treatment is given to entrepreneurs who are prompt in repaying the loans.	**.612**	.182	.161	.076	-.068	.736
4.	The moratorium period for repayment of loan is reasonable	**.600**	-.078	-.198	.257	.350	.650
5.	The banks' loan application carries adequate provisions to collect needed information for grating loans.	.095	**.810**	-017	.153	.053	.583
6.	The bank officials make frequent visits to the SSI units.	.112	**.694**	-.083	-.029	-.145	.596
7.	The rate of interest charged on the bank loan is reasonable.	.169	-.015	**.787**	-.021	-.029	.256
8.	The margin fixed by the bank is reasonable.	.130	-.060	**.686**	.224	.200	.506
9.	The bank's service charges are reasonable.	.450	.014	**-.500**	.262	-.142	.554
10.	The bank takes the minimum time to sanction the loan.	-.057	.127	.023	**.828**	-.054	.524
11.	The loan amount sanctioned is adequate.	.295	.132	.151	.093	**.686**	.693
12.	The banks are friendly to entrepreneurs and provide advice on financial matters.	.180	.229	-.099	.309	**-.564**	.445
	Eigen value	**3.11**	**1.70**	**1.43**	**1.20**	**1.11**	
	Percentage of variance	**20.8**	**11.3**	**9.6**	**8.0**	**7.4**	
	Cumulative percentage of variance	**20.8**	**32.1**	**41.6**	**49.7**	**57.1**	

Table 2 exhibits the rotated factor loadings for the twelve statements (variables) related to the opinion of entrepreneurs on the financial institutions assisting SSI units. It is observed from Table 6.21 that all the twelve statements have been extracted into five factors. These five factors have been named properly on the basis of variables loaded and the communality values for each variable are given in factor-wise tables from 3 to 7.

Table 3
Factor 1 – Repayment of Loan

Sl. No.	Variables	Factor Loading	Communality (h²)
1.	The repayment schedule for the loan is reasonable.	0.653	0.650
2.	The repayment schedule is fixed in consultation with the borrowers.	0.636	0.510
3.	Preferential treatment is given to entrepreneurs who are prompt in repaying the loans.	0.612	0.736
4.	The moratorium period for repayment of loan is reasonable	0.600	0.650

The first factor is narrated as **"Repayment of Loan"** on the basis of loaded variables. In this factor, four variables such as – a) the repayment schedule for the loan is reasonable; b) the repayment schedule is fixed in consultation with the borrowers; c) preferential treatment is given to entrepreneurs who are prompt in repaying the loans; and d) the moratorium period for repayment of loan is reasonable – are loaded with 0.653, 0.636, 0.612 and 0.600 respectively and shown in Table 3. These four variables have high communality indicating that variables within the Factor 1 have very high association among them.

All the variables have high communality, indicating that the variables within Factor 1 have very high association. The Eigen value and the percentage of variance explained is 3.11 and 20.8 respectively. Thus, the 'Repayment of Loan' factor is identified as one of the important factors influencing the entrepreneurs on the financial institutions assisting SSI units.

Table 4
Factor 2 – Formalities

Sl. No.	Variables	Factor Loading	Communality (h²)
1.	The banks' loan application carries adequate provisions to collect needed information for grating loans.	0.810	0.583
2.	The bank officials make frequent visits to the SSI units.	0.694	0.596

The second factor is identified as **"Formalities"** on the basis of loaded variables. The variables included in this factor are given in Table 4. It indicates that among the variables, 'the bank's loan application carries adequate provisions to collect needed information for grating loans', and 'the bank officials make frequent visits to the SSI units' are important variables in this category. The higher factor loading on its variables helps in identifying variables associated with Factor 2.

The total variance explained by way of Eigen value to this factor is 1.70 and the percentage of variance accounted for 11.3. The formalities adopted by the financial institutions are considered as an important factor in influencing the entrepreneurs' opinion in assisting SSI units.

Table 5
Factor 3 – Reasonable Charges

Sl. No.	Variables	Factor Loading	Communality (h^2)
1.	The rate of interest charged on the bank loan is reasonable.	0.787	0.256
2.	The margin fixed by the bank is reasonable.	0.686	0.506
3.	The bank's service charges are reasonable.	-0.500	0.554

Table 5 indicates the third factor which is named as **"Reasonable Charges"** based on variables loaded on it. The variables, viz. 'the rate of interested charged on the bank loan is reasonable' with 0.787 factor loading with a communality value of 0.256, and 'the margin fixed by the bank is reasonable' with 0.686 factor loading with communality value of 0.506 have a positive loading on Factor 3. But, 'the bank's service charges are reasonable' has a negative factor loading of -0.500 with communality value of 0.554. The extracted Eigen value is 1.43 and the percentage of variance explained in this factor is 9.6. It indicates that these variables have high association among them.

Table 6
Factor 4 – Minimum Time

Sl. No.	Variables	Factor Loading	Communality (h^2)
1.	The bank takes the minimum time to sanction the loan.	0.828	0.524

The fourth factor has been identified as **"Minimum Time"** with one positive variable and it is exhibited in Table 6. The factor 'the bank takes the minimum time to sanction the loan' has been accounted for 0.828 with factor loading. The communality value for this variable is 0.524. It indicates that higher amount of variance is explained by the extracted factors. The total variance explained is given in the form of Eigen value. It is 1.20 for the fourth factor. It accounted for 8.0 percentage of variance.

Table 7
Factor 5 – Adequate Loan

Sl. No.	Variables	Factor Loading	Communality (h^2)
1.	The loan amount sanctioned is adequate.	0.686	0.693
2.	The banks are friendly to entrepreneurs and provide advice on financial matters.	-0.564	0.445

The fifth factor is designed as **"Adequate Loan"** on the basis of loaded variables. Two variables such as 'the loan amount sanctioned is adequate' and 'the banks are friendly to entrepreneurs and provide advice on financial matters' are loaded with 0.686 and 0.564 respectively and shown in Table 7. These two variables have some communality indicating that variables within the Factor 5 have high association among them.

The Eigen value and the percentage of variance explained is 1.11 and 7.4 respectively. Thus, the factor 'adequate loan' is identified as one of the important factors influencing the entrepreneurs on financial institutions assisting SSI units.

FINDINGS

It is inferred from the study that the factors viz. a) Repament of Loan, b) Formalities, c) Reasonable Charges, d) Minimum Time, and e) Adequate Loan, are identified as the main factors which influence the opinion of entrepreneurs on the financial institutions assisting SSI units in Madurai district.

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GIG ECONOMY IN INDIA- AN OVERVIEW

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ABSTRACT

The survival of today's competitive business environment need to increase efficiency and agility in the business and the innovation and technological up gradation will help to capture the global business. Technological developments are the milestone for the Indian economy to expand their trade across the borders. The Coronavirus Pandemic has turned the world over and shifted the working styles to work-from-home and hybrid work, thus given a huge fillip to the country's gig economy. Moreover, the Covid has changed the conventional 9-5 working world and made many blue- and white-collar employees to seek after gig work for extra - or even essential - pay during these exceptional times. The research paper ties to study about gig workers -meaning,classification, driving forces,challenges and the future scope of Gig economy in India.

Key words: Gig workers,Gig economy,Technology,labour laws,Government policies and Unemployment etc.,

INTRODUCTION

The survival of today's competitive business environment need to increase efficiency and agility in the business and the innovation and technological up gradation will help to capture the global business. This means recognizing the changing business environment is in the midst of a digital revolution.Artificial Intelligence (AI) and machine learning(ML),robotic process automation(RPA), advanced data analytics, and cloud computing infrastructure are some of the technologies that are reshaping and extending the Indian economy across the borders. The post-pandemic shift in working styles to work-from-home and hybrid work, has given a huge fillip to the country's gig economy. The marketing and sales jobs for instance saw an almost triple digit growth in appointments. The great news is that while the bigger cities have expectedly bagged the largest share of the surge, the tier-1 and tier-2 cities haven't been left far behind either. The internet and mobile telephone that has been penetrating deeper into the country's interiors acts as the foundational infrastructure for most of the gigs across industries like fintech, health-tech, e-commerce and Q-commerce. Technology has thus created a paradigm shift and turned the tables on the country's geography, which would have been unimaginable in the conventional economy.TheGig economy in India has grown rapidly over the past few years, and expanded exponentially since the onset of the coronavirus pandemic, due in part to the increased reliance on gig workers to home-deliver necessities to consumers. Furthermore, the crisis has upended the traditional 9-5 working world and caused many blue- and white-collar employees to pursue gig work for additional – or even primary – income during these unprecedented times.

CONCEPT OF GIG ECONOMY

India is a developing country and facing a lot of Unemployment threats due to over population. Gig economy acts as a connecting bridge between unemployment and permanent jobs.The expression "Gig" is gained from the music world, where performers book "gigs" that are single or short -term engagements at diverse places. A gig economy is a work market that depends vigorously on impermanent and temporary jobs filled by self employed entities and specialists as opposed to full-time long-lasting representatives. It is also known as the on-demand economy and rapidly growing trend in India.Gig laborers gain adaptability and autonomy yet almost no professional stability. Numerous businesses set aside cash by trying not to pay advantages, such as health coverage and paid vacation time.

REVIEW OF RELATED LITERATURE

Dr. Vijeta Banwari (November2018)in her paper **"Gig Economy:** Challenges and Opportunities in India" discussed that the challenges that come with the fast growth of Gig economy.Challenges can be converted into opportunities with the help of collaboration between Government, workers and educational institutions. Government policies and labour laws will go a long way in deciding scope of Gig economy in India.

Suryavanshi,Pushpa.(2022)in her paper" **Gig economy**" mentioned thatprotection must be given for gig workers and contractual workers through minimum wages,maternity benefits and other welfare provisions. It also emphasized that Gig economy will give a tremendous contribution for the development of Indian economy.
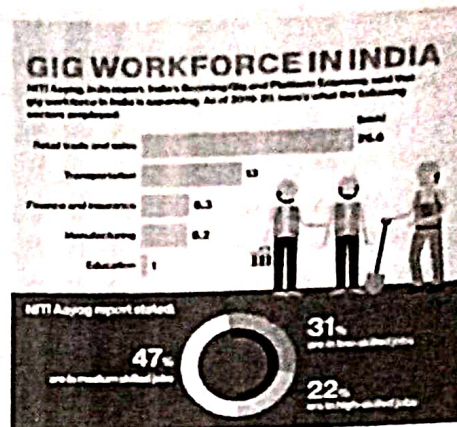
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India's Booming Gig and Platform Economy, NITI Aayog. (2022) The report offered a thorough deliberate way to deal with gauge the ongoing size of Gig Economy and its true capacity for work creation. It analyzed the benefits and difficulties of Gig Stage and furthermore made sense of the worldwide prescribed procedures for government backed retirement programs. The target of study comprehended the importance, work age and proposed measures to support work in the area.

Dr. SHAMA YASMEEN, Mr.HITESH BHOI, &Ms. MAMATHA . (2022) in their Research paper"THE GIG ECONOMY AND ITS IMPACT ON FUTURE WORKING GROUP"highlighted the gig economy's marked success depend upon the proper utilization of gig employees in the right circumstances and it suits the operations of the business., the gig economy can be beneficial for independent contractors who have autonomy over themselves and can continuously reform their working environment.

CLASSIFICATION OF GIG EMPLOYMENT

Gig workers can be classified as Platform workers and non-Platform workers. Platform workers are those whose work is based on online software apps or digital platforms such as food aggregator platforms Zomato, Swiggy, Ola, and others. Platform workers are termed as "independent contractors". Non-platform workers are generally casual wage and own-account workers in conventional sectors, engaged part-time or full-time. According to NITI Aayog , in its report explained that as on 2019-20 nearly 26.6 lakhs gig workers were engaged on Retail trade and sales,13 lakhs workers in Transportation, 6.3lakhs workers in Finance and Insuarance,6.2 lakhs in Manufacturing and 1lakh workers in Education . The NITI Aayog report added that around 47 per cent of the gig work is in medium skilled jobs, while 22 per cent is in high-skilled and 31 per cent in low-skilled jobs.

SOURCE:https://www.businesstoday.in/latest/economy/story/gig-workforce-expected-to-expand-to-2-35-cr-by-2029-30-niti-aayog-report-339332-2022-06-27

GROWTH DRIVERS OF GIG ECONOMY IN INDIA

- **Usage of Internet and Mobile Technology:**The broad reception of cell phones and the accessibility of fast web has made it more straightforward for laborers and organizations to associate through internet-based stages, working with the development of the gig economy.

- **Economic Liberalisation:** The Indian government's financial progression strategies have prompted expanded rivalry and a more open market, which has energized the development of the gig economy.

- **Increasing Demand for Flexible Work:** The gig economy is especially alluring for Indian laborers who are searching for adaptable work plans that permit them to adjust their own and proficient lives.

- **Demographic factors:** The gig economy is additionally determined by the enormous and developing number of youthful, instructed and aggressive Indians who are trying to work on their occupations with side pay age.

- **Growth of E-commerce:** The fast development of web-based business in India has prompted a huge expansion popular for conveyance and coordinated factors administrations, which has thusly prompted the development of the gig economy in these areas.

CHALLENGES OF GIG WORKERS IN INDIA

Indian economy has become strong in the recent decades and remarkable growth has attained in all business sectors. In case of gig workers are conserved, it is facing many challenges in the Indian scenario. The following are the challenges of Gig workers:

1.Work uncertainty: Gig laborers in India frequently need professional stability, as they are regularly connected on a venture or task premise, as opposed to as long-lasting representatives. This can prompt monetary unsteadiness and make it hard for laborers to anticipate what's in store.

2.Pay shakiness: Gig laborers in India might encounter changes in pay because of the sporadic and eccentric nature of gig work. This can make it hard for them to meet their monetary commitments and plan for what's in store.

3.Absence of formalization: Numerous gig laborers in India work in the casual area, which can restrict their capacity to get to credit, government support programs, and different assets.

4.Absence of legitimate assurance and government managed retirement: Gig laborers are not covered under India's work regulations and don't have lawful security in the event of work environment badgering, segregation, or out of line end. Gig laborers don't approach federal retirement aide advantages, for example, health care coverage, retirement benefits, and paid leave.

5.Inconsistent bartering power: Gig laborers in India might miss the mark on haggling ability to haggle fair pay and working circumstances, especially when they are contending with an enormous pool of different specialists on computerized stages.

6.Installment issues: Deferred or non-installment of wages is a significant issue for gig laborers. The public authority needs to lay out instruments for guaranteeing that gig laborers are paid on time and that they can determine installment questions rapidly.

7.Preparing and upskilling: Numerous gig laborers come up short on vital abilities to actually play out their work. Gig laborers frequently have restricted open doors for upskilling and professional success.

8.Social disgrace: Gig work is as yet seen by a few in India as a brief or low-paying choice, which can bring about friendly shame and absence of acknowledgment for the work done by gig laborers

RECOMMENDATIONS AND SUGGESTIONS

Inorder to overcome the challenges of Gig workers,the Indian Government should make necessary changes in Gig workplace. The commendations and suggestions are listed below:

- **New Regulations:**The Indian government should spread out clear rules and regulations for the gig economy to ensure that interest of gig workersareto be protected and that organisations must be held responsible for their wellbeing. Fiscal incentives,Tax-breaks or startup grantscan be initiated for businesses who provide employment opportunities to larger women workforce. Credit facility can be enhanced through financial products specifically designed for platform workers and for stat-up ideas.

- **Rural employability:** The Government should design special initiatives for the self-employed individuals engaged in the business of selling regional and rural cuisine can be identified and may be linked to digital platforms so that they can sell their produce in overseas markets.

- **Social Security Blanket:**The Organisations employing gig workers must be provided with basic retirement and health benefits which will help for their long term sustainability The Government must provide awareness programmes regarding the various benefits plans available for them.

- **Education and Training:** The government should **initiate District Industries Centre to provide various training programmes to enhance their skills and to educate them to work in digital environment.**

- **Encourage Fair Competition and Innovation:**Government can support fair rivalry by having guidelines that keep organizations from misclassifying laborers as selfemployed entities and by authorizing fair trade practices.Also, they can energize advancement in the gig economy by giving duty motivating forces, subsidizing and other help to organizations that are making new plans of action and advances

- **Connecting Women Empowerment in Gig Economy:** The Government must take necessary steps to build the secured, safety environment and social infrastructure which **supports the engagement of women in the economy.**

FUTURE SCOPE OF GIG ECONOMY IN INDIA

Taking a global view of the gig economy and juxtaposing it to the Indian experience can give a better perspective and a sense of direction about this new and rising economic phenomenon. The number of gig workers globally is expected to rise from 43 million in 2018 to 78 million in 2023, and the global freelancing market is expected to grow at a healthy CAGR of 15% through 2026. At present, 50% of the global freelancers are doing skilled work like programming, counselling, IT services and marketing. These trends will be quite insightful for emerging nations like India, Indonesia and Brazil, whose governments must plan ahead to shape their gig economies and prioritize sectors for dedicating resources.The NITI Aayog report estimated that in 2020–21, 77 lakh (7.7 million) workers were engaged in the gig economy. They constituted 2.6% of the non-agricultural workforce or 1.5% of the total workforce in India.. The gig labor force is supposed to extend to 2.35 crore (23.5 million) laborers by 2029-30. Gig laborers are supposed to shape 6.7% of the non-farming labor force or 4.1% of the absolute job in India by 2029-30.. Trend shows the concentration of workers in medium skills is gradually declining and that of the low skilled and high skilled is increasing. This shows that the gig economy can fundamentally affect India's economy by giving work open doors and helping financial development. The gig economy has proactively begun to have an effect in different areas, and with additional development and improvement, it can possibly make a significant positive effect on India's economy different scope of areas and businesses.

CONCLUSION

Post covid has made the working environment to work in Hybrid mode. It also made the employees to work in digital platforms. The gig economy has changed the manner in which we work, giving exceptional adaptability and opportunity to laborers all over the planet. In India,the Gig economy is growing rapidly providing a flexible and convenient platform for the workers and providing a significant contribution for the economic development of the country.But there are no regulatory framework,rules,regulations,medical benefits, Maternity benefits, safety and security measures for Gig workers.The Indian Government must pass necessary bills for the new phase of Gig platform. This research paper has tried to understand the predominant role of Indian gig economy as the world starts to more fully embrace this new way of working, which will undoubtedly continue to grow post-pandemic, talent leaders must plan for this inevitable shift and find new ways to support workers to ensure the gig economy's long-term viability.

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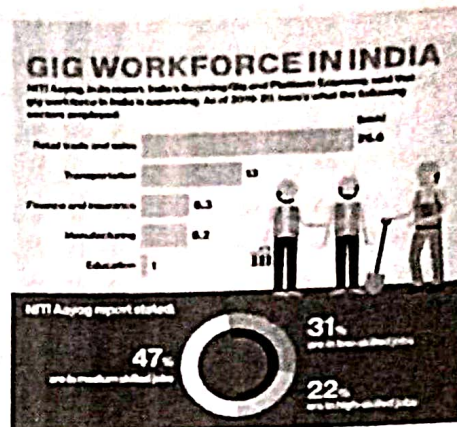
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Analyzing the Impact of Alterations in Capital Structure on Firm Value: A Study with Emphasis on Selected Information Technology Companies

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Abstract
Finance plays an indispensable role at every juncture of an enterprise's journey, from its inception to its culmination. Scarce financial resources hinder business operations, while mismanagement thereof spells impending failure. To instate an optimal financial framework conducive to seamless operations, meticulous evaluation of both current and future capital requirements is imperative. Crafting a capital structure of utmost efficiency is paramount, for it directly influences the cost of capital and the ramifications of equity trading or leverage on the company's valuation. Consequently, the most advantageous capital structure entails a harmonious amalgamation of debt and equity, aimed at maximizing the company's value and enriching its stakeholders, all while minimizing the cost of capital.
Keywords: Capital Structure, Cost of Capital, Value of the Firm and Leverage

Introduction

Finance serves as the backbone of every enterprise, dictating its journey from inception to culmination. Scant financial resources impede operational efficacy, while mishandling precipitates inevitable downfall. Thus, it becomes imperative to meticulously analyze both present and future capital requisites to establish an ideal financial framework.

The evaluation of capital needs and the delineation of an optimal capital structure are cardinal tasks for any corporation. This structure, comprising a judicious blend of debt and equity, secures enduring funding and encompasses shareholder funds, long-term debt, and preferred share capital.

The strategic formulation of the capital structure holds paramount importance, given its profound impact on the company's valuation vis-à-vis the cost of capital and the dynamics of equity trading or leverage. An adept fusion of debt and equity not only amplifies the company's valuation and enriches owner wealth but also minimizes the cost of capital, thereby augmenting overall value.

While the capital structure may not directly influence total earnings, its ramifications on equity shareholders' earnings significantly mold company valuation. Practical hurdles loom large in determining the optimal capital structure, owing to the variegated nature of businesses and industries, underscored by a medley of quantitative and qualitative factors. Such intricacies defy a singular theoretical framework.

Statement of the Problem

Given their dependence on markets in the United States and other Western nations, which are notably sensitive to financial conditions, the market valuation of Indian information technology firms is profoundly shaped by their capital structure. As a result, the researcher embarked on an exploration of the capital structures of handpicked Indian IT companies, probing the repercussions of adjustments on both the market worth of equity shares and the holistic company valuation. Additionally, the inquiry scrutinized the hurdles encountered in service industries stemming from shifts in capital structure.

Review of Literature

A meticulous review of prior studies is imperative to enhance the credibility and consistency of the current research endeavor, injecting it with vitality and relevance. Several seminal works closely related to the present topic have contributed substantial insights to the field.

In their paper "The Theory and Practice of Corporate Finance," Graham and Compbell R. Harvey underscore the significance of credit ratings as the second most pressing concern for chief financial officers when formulating their capital structure. A notable 57.3 percent of CFOs regard credit ratings as pivotal in determining the optimal debt levels for their companies.

Malcom Baker and Jeffry Wargler, in their study "Market Timing and Capital Structure," posit that prior attempts to time stock issuance during periods of favorable market valuations exert a lasting influence on corporate capital structures. This suggests that capital structures are shaped by a culmination of past market timing endeavors rather than a dynamically optimized strategy.

Eugene F. Fama and Kenneth R. French, in their research titled "Testing Trade-Off and Pecking Order Predictions about Dividends and Debt," observe that firms' debt ratios gravitate towards their target levels over time. This implies that corporations exhibit a gradual adjustment process towards their long-run or optimal leverage levels.

Welch, in the study "Stock Returns and Capital Structure," highlights the enduring impact of equity price movements on corporate capital structures. He contends that stock returns exert the most significant influence on capital structure changes, eclipsing company-specific rationales for net issuance activities.

Scope of the Study

The objective of this study is to examine how alterations in a company's overall worth stemming from shifts in its capital structure impact its total valuation within the realm of information technology services.

Objectives of the Study

The primary aim of the study is to assess the influence of capital structure modifications on the overall value of the firm. The specific objectives of this research are as follows:
- To examine the capital structure methodologies employed by chosen Information Technology enterprises;
- To analyse the trajectory of leverage ratios concerning capital structure determinations, and subsequently evaluate the firm's value utilizing the Net Income Approach Method.
- To offer recommendations based on the insights derived from the study.

Methodology of the Study
Collection of Data

The research is entirely based on secondary data. As a result, data for the current study was gathered from the company, numerous websites, books, and journals. The research examines the ideas and works of a variety of authors from the fields of industry, academia, and research. The bibliography lists the journals and books that were used in this investigation.

Period of the Study

The present study covers a period of five years from 2018 – 19 to 2022 - 23.

Operational Definitions of the Concepts

Capital Structure: The composition of a company's financial foundation encompasses the blend of debt and equity instruments utilized to underwrite its assets.

Financial Risk: This denotes the heightened risk assumed by ordinary shareholders when a company opts for debt financing, resulting in a greater proportion of debt within the capital structure.

Cost of Capital: It represents the minimum rate of return necessary to uphold the market value of equity shares.

Weighted Average Cost of Capital: This quantifies the enduring expense of funds by dividing the cost of each capital type by its respective portion in the company's financial framework.

Earnings Per Share: It signifies the portion of profit accessible to equity holders based on their ownership stake in the company.

Diluted Earnings Per Share: Following adjustments for factors such as preference shares, convertible debentures, equity share buybacks, or issuance of new shares or bonus shares, the company's diluted earnings per share are computed.

Tools for Analysis

The gathered secondary data underwent meticulous tabulation and analysis, employing insightful tools such as Ratio Analysis, Capital Structure Analysis, and EBIT-EPS Analysis.

Capital Gearing Ratio

Year	WIPRO		HCL		TCS	
	CGR	Trend %	CGR	Trend %	CGR	Trend %
2019	0.0315	100	0.0014	100	0.0014	100
2020	0.0287	91.11	0.0013	93.34	0.0009	59.68
2021	0.0251	79.78	0.0012	85.75	0.0006	39.58
2022	0.0023	7.43	0.0012	85.36	0.0005	36.08
2023	0.0010	3.12	0.0011	74.95	0.0004	29.36

Source: Published Annual reports 2019 – 2023

Proprietary Ratio

Year	WIPRO		HCL		TCS	
	Proprietary Ratio	Trend %	Proprietary Ratio	Trend %	Proprietary Ratio	Trend %
2019	0.650	100.00	0.780	100.00	0.720	100.00
2020	0.690	106.62	0.810	103.82	0.760	105.25

2021	0.740	114.06	0.800	103.01	0.870	120.70
2022	0.720	111.11	0.840	107.83	0.830	115.70
2023	0.740	113.70	0.810	104.34	0.790	110.11

Source: Published Annual Reports 2017 – 2021

Return on Equity

Year	WIPRO		HCL		TCS	
	ROE	Trend %	ROE	Trend %	ROE	Trend %
2019	23.66	100.00	32.70	100.00	42.40	100.00
2020	19.80	83.67	22.01	67.30	38.87	91.68
2021	17.47	73.84	28.02	85.69	30.70	72.41
2022	18.27	77.22	25.89	79.17	32.44	76.51
2023	15.42	65.14	26.97	82.47	38.66	91.17

Source: Published Annual reports 2019 – 2023

Earnings Per Share

Year	WIPRO		HCL		TCS	
	EPS	Trend %	EPS	Trend %	EPS	Trend %
2019	₹ 33.28	100	₹ 45.14	100	₹ 98.31	100
2020	₹ 32.91	98.87	₹ 33.56	74.36	₹ 116.13	118.12
2021	₹ 33.61	100.98	₹ 51.01	113.02	₹ 121.58	123.66
2022	₹ 16.26	48.85	₹ 51.26	113.56	₹ 127.88	130.08
2023	₹ 12.67	38.08	₹ 60.53	134.1	₹ 80.48	81.86

Source: Published Annual reports 2019 – 2023

Price Earnings Ratio

Year	WIPRO		HCL		TCS	
	P/E Ratio	Trend %	P/E Ratio	Trend %	P/E Ratio	Trend %
2019	18.9	100	20.38	100	25.91	100
2020	17.15	90.75	24.26	119.03	21.67	83.63
2021	15.34	81.21	16.91	82.99	21.08	81.35
2022	17.29	91.52	18.39	90.25	24.56	94.78
2023	20.1	106.4	17.97	88.17	25.35	97.85

Source: Published Annual reports 2019 – 2023

Return on Capital Employed

Year	WIPRO		HCL		TCS	
	ROCE	Trend %	ROCE	Trend %	ROCE	Trend %
2019	37.48	100	52.63	100	71.1	100
2020	33.9	90.46	35.04	66.59	62.08	87.31
2021	28.16	75.15	55.52	105.48	44.29	62.28
2022	31.55	84.17	62.19	118.17	48.33	67.97
2023	27.67	73.82	62.21	118.19	67.76	95.29

Source: Published Annual reports 2019 – 2023

Debt Coverage Ratio

Year	WIPRO		HCL		TCS	
	Debt Coverage Ratio	Trend %	Debt Coverage Ratio	Trend %	Debt Coverage Ratio	Trend %
2019	14.44	100	0.16	100	0.4	100
2020	11.32	78.33	0.16	96.22	0.21	52.89
2021	9.76	67.58	0.14	85	0.27	68.5
2022	8.04	55.69	0.1	61.66	0.24	60.88
2023	7.57	52.43	0.09	52.39	0.03	8.36

Source: Published Annual reports 2019 – 2023

Debt – Equity Ratio

Year	WIPRO		HCL		TCS	
	Debt-Equity Ratio	Trend %	Debt-Equity Ratio	Trend %	Debt-Equity Ratio	Trend %
2019	0.34	100	0.03	100	0.15	100
2020	0.31	91.31	0.02	87.73	0.09	60.83
2021	0.21	62.97	0.02	77.73	0.07	42.45
2022	0.21	61.96	0.02	81.94	0.07	42.61
2023	0.2	58.64	0.08	308.48	0.1	63.37

Source: Published Annual reports 2019 – 2023

Fixed Assets to Long-Term Funds Ratio

Year	WIPRO		HCL		TCS	
	Fixed Assets To Long-Term Funds Ratio	Trend %	Fixed Assets To Long-Term Funds Ratio	Trend %	Fixed Assets To Long-Term Funds Ratio	Trend %
2019	0.15	100	0.18	100	0.23	100
2020	0.1	64.09	0.17	91.08	0.19	81.96
2021	0.09	61.86	0.14	74.06	0.14	58.36
2022	0.12	80.03	0.13	70.85	0.14	59.9
2023	0.12	80.6	0.12	66.46	0.01	4.5

Source: Published Annual reports 2019 – 2023

Interest Coverage Ratio

Year	WIPRO		HCL		TCS	
	Interest Coverage Ratio	Trend %	Interest Coverage Ratio	Trend %	Interest Coverage Ratio	Trend %
2019	30.09	100	127.95	100	309.53	100
2020	20.86	69.32	126.88	99.16	2145.08	693.01
2021	28.26	93.9	155.95	121.88	1899.06	613.53
2022	27.11	90.1	387.91	303.16	1044.4	337.41
2023	19.8	65.82	623.19	487.04	243.01	78.51

Source: Published Annual reports 2019 – 2023

Shareholders' Equity Ratio

Year	WIPRO		HCL		TCS	
	Shareholders' Equity Ratio	Trend %	Shareholders' Equity Ratio	Trend %	Shareholders' Equity Ratio	Trend %
2019	0.64	100	0.78	100	0.72	100
2020	0.68	106.84	0.81	103.74	0.76	105.25
2021	0.73	114.64	0.79	100.83	0.87	120.7
2022	0.71	111.57	0.82	105.69	0.83	115.7
2023	0.73	114.33	0.8	102.46	0.79	110.11

Sales to Capital Employed Ratio

Year	WIPRO		HCL		TCS	
	Sales to Capital Employed	Trend %	Sales to Capital Employed	Trend %	Sales to Capital Employed	Trend %
2019	1.41	100	1.16	100	2.12	100
2020	1.38	97.29	0.81	69.6	1.83	86.15
2021	1.16	82.03	1.23	105.49	1.35	63.6
2022	1.35	95.72	1.54	132.24	1.5	70.69
2023	1.28	90.38	1.62	139.48	2.02	95.1

Source: Published Annual reports 2019 – 2023

Equity Dividend Cover Ratio

Year	WIPRO		HCL		TCS	
	Equity Dividend Cover	Trend %	Equity Dividend Cover	Trend %	Equity Dividend Cover	Trend %
2019	2.8	100	2.66	100	1.13	100
2020	2.27	81.02	2.1	79.03	2.41	213.36
2021	9.3	331.89	2.15	80.81	2.19	193.42
2022	14.19	506.26	4.22	158.61	2.29	202.81
2023	13.96	498.21	7.47	280.74	2.67	235.98

Source: Published Annual reports 2019 – 2023

Net Asset Value Per Share Ratio

Year	WIPRO		HCL		TCS	
	Net Asset Value Per Share	Trend %	Net Asset Value Per Share	Trend %	Net Asset Value Per Share	Trend %
2019	₹ 140.64	100	₹ 138.02	100	₹ 231.87	100
2020	₹ 166.20	118.18	₹ 152.50	110.49	₹ 298.75	128.85
2021	₹ 192.32	136.75	₹ 182.04	131.89	₹ 395.96	170.77
2022	₹ 88.97	63.26	₹197.98	143.44	₹ 394.19	170.01
2023	₹ 82.22	58.46	₹ 224.43	162.6	₹ 208.19	89.79

Source: Published Annual reports 2019 – 2023

Market Price to Net Asset Value Ratio

Year	WIPRO		HCL		TCS	
	Market Price to Net Asset Value Ratio	Trend %	Market Price to Net Asset Value Ratio	Trend %	Market Price to Net Asset Value Ratio	Trend %
2019	₹ 140.64	100	₹ 138.02	100	₹ 231.87	100
2020	₹ 166.20	118.18	₹ 152.50	110.49	₹ 298.75	128.85
2021	₹ 192.32	136.75	₹ 182.04	131.89	₹ 395.96	170.77
2022	₹ 88.97	63.26	₹ 197.98	143.44	₹ 394.19	170.01
2023	₹ 82.22	58.46	₹ 224.43	162.6	₹ 208.19	89.79

Source: Published Annual reports 2019 – 2023

Dividend Pay-Out Ratio

Year	WIPRO		HCL		TCS	
	Dividend Pay-Out Ratio	Trend %	Dividend Pay-Out Ratio	Trend %	Dividend Pay-Out Ratio	Trend %
2019	36.06	100	66.47	100	80.36	100
2020	18.23	50.57	47.67	71.72	37.46	46.62
2021	5.95	16.5	47.05	70.78	38.66	48.11
2022	6.15	17.06	23.41	35.22	39.1	48.66
2023	7.89	21.88	13.22	19.89	37.28	46.39

Source: Published Annual reports 2019 – 2023

Dividend Yield Ratio

Year	WIPRO		HCL		TCS	
	Dividend Yield Ratio	Trend %	Dividend Yield Ratio	Trend %	Dividend Yield Ratio	Trend %
2019	0.019	100	0.033	100	0.031	100
2020	0.011	55.72	0.02	60.25	0.017	55.74
2021	0.004	20.32	0.028	85.3	0.018	59.14
2022	0.004	18.64	0.013	39.03	0.016	51.33
2023	0.004	20.57	0.007	22.55	0.015	47.41

Source: Published Annual reports 2019 – 2023

Analysis of Financial Leverage

Year	WIPRO		HCL		TCS	
	Financial Leverage	Trend %	Financial Leverage	Trend %	Financial Leverage	Trend %
2019	0.019	100	0.033	100	0.031	100
2020	0.011	55.72	0.02	60.25	0.017	55.74
2021	0.004	20.32	0.028	85.3	0.018	59.14
2022	0.004	18.64	0.013	39.03	0.016	51.33
2023	0.004	20.57	0.007	22.55	0.015	47.41

Source: Published Annual reports 2019 – 2023

Calculation of Value of the Company

Tables 2.1, 2.2 and 2.3 show the analysis of capital structure of selected companies on the basis of Net Income Approach Method.

Valueof Wipro Ltd

Computation of Value of the Company – Wipro					
Computation of Value of the Company – Wipro					
	Rs	Rs	Rs	Rs	Rs
Particulars/Year	2019	2020	2021	2022	2023
Earnings Per Share	₹ 33.28	₹ 32.91	₹ 33.61	₹ 16.26	₹ 12.67
Market Price Per Share	₹ 628.85	₹ 564.25	₹ 515.70	₹ 281.15	₹ 254.80
Cost Of Equity (Ke)	5.29%	5.83%	6.52%	5.78%	4.97%
Market Value of Debt					
	Rs in Crores	Rs in Crores	Rs in Crores	Rs in Crores	Rs in Crores
Particulars/Year	2019	2020	2021	2022	2023
Secured Loans	₹ 703.40	₹ 120.10	₹ 116.10	₹ 53.90	₹ 15.20
Unsecured Loans	₹ 7,011.40	₹ 6,575.90	₹ 6,048.80	₹ 4,666.20	₹ 5,059.00
Total Debt	₹ 7,714.80	₹ 6,696.00	₹ 6,164.90	₹ 4,720.10	₹ 5,074.20
Value of the Company – Wipro					
	Rs in Crores	Rs in Crores	Rs in Crores	Rs in Crores	Rs in Crores
Particulars/Year	2019	2020	2021	2022	2023
1. EBIT	₹ 10,919.90	₹ 11,009.90	₹ 11,079.20	₹ 10,418.60	₹ 10,395.40
2. Interest	₹ 362.90	₹ 527.80	₹ 392.10	₹ 384.30	₹ 524.90
3. Net Income (Earnings to Equity Shareholders) (1-2)	₹ 10,557.00	₹ 10,482.10	₹ 10,687.10	₹ 10,034.30	₹ 9,870.50
4. Equity Capitalisation Rate (Ke in Percent)	5.29%	5.83%	6.52%	5.78%	4.97%
5. Market Value of Equity (3/4*100)	₹ 1,99,475.9	₹ 1,79,737.9	₹ 1,63,991.6	₹ 1,73,519.4	₹ 1,98,431.5
6. Market Value of Debt	₹ 7,714.80	₹ 6,696.00	₹ 6,164.90	₹ 4,720.10	₹ 5,074.20
7. Total Value of the Compansy (5+6)	₹ 2,07,190.7	₹ 1,86,433.9	₹ 1,70,156.5	₹ 1,78,239.5	₹ 2,03,505.7
8. Overall Cost of Capital rate in percentage (1/7*100)	5.270	5.906	6.511	5.845	5.108

Table 2.1 illustrates the overall cost of capital and the valuation of WIPRO. In 2019, the overall cost of capital stood at 5.27, but it surged to 5.90 in 2020. Concurrently, loans decreased from 7714.80 crores to 6696.00 crores, leading to a decline in the company's worth from 207190.74 crores to 186433.95 crores. By 2021, the company's valuation further reduced to 170156.55 crores, while stock capitalization increased from 5.83 to 6.52. Subsequently, in 2022, the company's valuation rose to 178239.47 crores, accompanied by a decrease in the overall cost of capital to 5.845. This was attributed to a decrease in the equity capitalization rate to 5.78 and an increase in debt capitalization to 173519.37 crores. By 2023, the company's value surged to 203505.68 crores, while the overall cost of capital declined to 5.108, alongside a decrease in the equity capitalization rate to 4.97.

Value of HCL Ltd

Computation of Value of the Company – HCL					
Calculation of Cost of Equity by Earning Price Approach					
	Rs	**Rs**	**Rs**	**Rs**	**Rs**
Particulars/Year	**2019**	**2020**	**2021**	**2022**	**2023**
Earnings Per Share	₹ 33.28	₹ 32.91	₹ 33.61	₹ 16.26	₹ 12.67
Market Price Per Share	₹ 628.85	₹ 564.25	₹ 515.70	₹ 281.15	₹ 254.80
Cost Of Equity (Ke)	5.29%	5.83%	6.52%	5.78%	4.97%
Market Value of Debt					
	Rs in Crores	**Rs in Crores**	**Rs in Crores**	**Rs in Crores**	**Rs in Crores**
Particulars/Year	**2019**	**2020**	**2021**	**2022**	**2023**
Secured Loans	₹ 33.28	₹32.91	₹ 33.61	₹16.26	₹ 12.67
Unsecured Loans	₹ 628.85	₹ 564.25	₹ 515.70	₹ 281.15	₹ 254.80
Total Debt	5.29%	5.83%	6.52%	5.78%	4.97%
Value of the Company – HCL					
	Rs in Crores	**Rs in Crores**	**Rs in Crores**	**Rs in Crores**	**Rs in Crores**
Particulars/Year	**2019**	**2020**	**2021**	**2022**	**2023**
1. EBIT	₹ 10,919.90	₹ 11,009.90	₹ 11,079.20	₹ 10,418.60	₹ 10,395.40
2. Interest	₹ 362.90	₹ 527.80	₹ 392.10	₹ 384.30	₹ 524.90
3. Net Income (Earnings to Equity Shareholders) (1-2)	₹ 10,557.00	₹ 10,482.10	₹ 10,687.10	₹ 10,034.30	₹ 9,870.50
4. Equity Capitalisation Rate (Ke in Percent)	5.29%	5.83%	6.52%	5.78%	4.97%
5. Market Value of Equity (3/4*100)	₹ 1,99,475.9	₹ 1,79,737.9	₹ 1,63,991.6	₹ 1,73,519.4	₹ 1,98,431.5
6. Market Value of Debt	₹ 7,714.80	₹ 6,696.00	₹ 6,164.90	₹ 4,720.10	₹ 5,074.20
7. Total Value of the Compansy (5+6)	₹ 2,07,190.7	₹ 1,86,433.9	₹ 1,70,156.5	₹ 1,78,239.5	₹ 2,03,505.7
8. Overall Cost of Capital rate in percentage (1/7*100)	5.270	5.906	6.511	5.845	5.108

Table 2.2 displays the entire cost of capital and the valuation of HCL Technologies. In 2019, the company's overall cost of capital stood at 4.945, with a valuation of 156917.96 crores. By 2020, the valuation decreased to 139939.67 crores, coinciding with a reduction in the overall cost of capital to 4.154. Notably, the overall debt increased from 40.63 crores to 41.74 crores during the year.

In 2021, the overall cost of capital surged to 5.950, while the company's valuation rose to 146856.91 crores. Simultaneously, the overall debt increased to 44.87 crores. The equity capitalization rate saw a significant increase from 4.12 to 5.91, primarily due to a decline in the market value of equities. By 2022, the overall cost of capital decreased to 5.451, with the company's valuation rising to 163683.89 crores. Notably, the debt content witnessed a dramatic decline from 44.87 crores to 33.00 crores during the year.

In 2023, the overall cost of capital increased to 5.574, while the company's valuation surged to 178892.03 crores. The equity capitalization rate rose from 5.44 to 5.57 over the year, driven by a substantial increase in the market price of stock from 163650.80 to 178860.03. In the information

technology industry, characterized by volatile markets and high business risk, mitigating financial risk often necessitates a significant proportion of stock ownership. Corporations prioritize high liquidity to facilitate prompt decision-making, leading them to opt for equity financing over borrowing.

Value of TCS Ltd

Computation of Value of the Company – TCS					
Calculation of Cost of Equity by Earning Price Approach					
	Rs	**Rs**	**Rs**	**Rs**	**Rs**
Particulars/Year	**2019**	**2020**	**2021**	**2022**	**2023**
Earnings Per Share	₹ 98.31	₹ 116.13	₹ 121.58	₹ 127.88	₹ 80.48
Market Price Per Share	₹ 2,547.05	₹ 2,516.05	₹ 2,562.35	₹ 3,140.30	₹ 2,040.20
Cost Of Equity (Ke)	3.86%	4.62%	4.74%	4.07%	3.94%
Market Value of Debt					
	Rs in Crores	**Rs in Crores**	**Rs in Crores**	**Rs in Crores**	**Rs in Crores**
Particulars/Year	**2019**	**2020**	**2021**	**2022**	**2023**
Secured Loans	₹ 64.13	₹ 161.57	₹ 44.00	₹ 39.00	₹ 33.00
Unsecured Loans	₹ 186.14	₹ 1.45	₹ 200.00	₹ 181.00	₹ 0.00
Total Debt	₹ 250.27	₹ 163.02	₹ 244.00	₹ 220.00	₹ 33.00
Value of the Company – Tcs					
	Rs in Crores	**Rs in Crores**	**Rs in Crores**	**Rs in Crores**	**Rs in Crores**
Particulars/Year	**2019**	**2020**	**2021**	**2022**	**2023**
1. EBIT	₹ 24,629.54	₹ 29,130.22	₹ 30,385.00	₹ 31,332.00	₹ 41,311.00
2. Interest	₹ 79.57	₹ 13.58	₹ 16.00	₹ 30.00	₹ 170.00
3. Net Income (Earnings to Equity Shareholders) (1-2)	₹ 24,549.97	₹ 29,116.64	₹ 30,369.00	₹ 31,302.00	₹ 41,141.00
4. Equity Capitalisation Rate (Ke in Percent)	3.86%	4.62%	4.74%	4.07%	3.94%
5. Market Value of Equity (3/4*100)	₹ 6,36,025.9	₹ 6,30,832.1	₹ 6,40,051.9	₹ 7,68,661.6	₹ 10,42,903.2
6. Market Value of Debt	₹ 250.27	₹ 163.02	₹ 244.00	₹ 220.00	₹ 33.00
7. Total Value of the Compansy (5+6)	₹ 6,36,276.2	₹ 6,30,995.2	₹ 6,40,295.9	₹ 7,68,881.6	₹ 10,42,936.2
8. Overall Cost of Capital rate in percentage (1/7*100)	3.871	4.617	4.745	4.075	3.961

Table 2.3 showcases the overall cost of capital and the valuation of TCS. In 2019, the overall cost of capital was 3.87, which increased to 4.62 in 2020 due to the repayment of certain secured loans. Consequently, the company's valuation rose as net income accrued to equity shareholders. However, in 2020, despite an increase in debt in the capital structure, the overall cost of capital did not decrease. This was attributed to a significant rise in the equity capitalization rate resulting from a decline in the market value of equity from 2547.05 to 2516.05.

By 2022, the overall cost of capital decreased from 4.74 to 4.07, accompanied by an increase in the company's valuation. This reduction was attributed to a decline in the equity capitalization rate. In 2023, the company's overall cost of capital further decreased from 4.07 to 3.94, while its valuation climbed from 768881.59 crores to 1042936.19 crores.

Findings of the Study

- The analysis revealed that the selected companies exhibit low gearing ratios, indicating a preference for equity trading. This suggests that equity owners' funds surpass those of fixed-interest-bearing securities like preference shares, debentures, and loans.
- The proprietary ratio of the selected organizations demonstrates a favourable trend, consistently exceeding 50% throughout the year. This signifies a secure position for the company's creditors.
- TCS showcased a superior return on equity ratio throughout the study period, consistently surpassing 35%, peaking at 42.40% in 2017. WIPRO and HCL Technologies also demonstrated robust growth, with returns exceeding 20% and 25%, respectively, implying satisfactory returns for stock investors.
- TCS consistently maintained a strong track record of profitability, with EPS consistently exceeding Rs. 80 and peaking at Rs. 127.88 during the study period. WIPRO and HCL Technologies exhibited varying EPS figures, with highs and lows ranging from Rs. 33.28 to Rs. 12.67 and Rs. 60.53 to Rs. 33.56, respectively.
- The year 2021 saw a low P/E ratio for the selected companies, indicating decreased income due to prevailing economic crises.
- TCS outperformed WIPRO and HCL Technologies in terms of Return on Capital Employed, demonstrating efficient utilization of long-term funds. WIPRO and HCL Technologies lagged behind in this aspect, suggesting suboptimal asset utilization compared to TCS.
- The debt-coverage ratio of HCL, TCS, and WIPRO reflects commendable debt-paying capabilities, with none exceeding 20% during the study period. TCS exhibited a relatively higher capacity for debt repayment compared to WIPRO and HCL Technologies.
- HCL and TCS' debt-to-equity ratios were favourable indicators for creditors, while WIPRO's ratio favoured owners over creditors, indicating a precarious situation for creditors.
- Fixed assets to long-term funds ratio analysis revealed a lower-than-ideal ratio, suggesting the purchase of fixed assets with short-term finances, an unfavourable strategy.
- TCS and HCL demonstrated high capacity to meet interest commitments, with interest coverage ratios consistently exceeding 300%. WIPRO also exhibited satisfactory performance in this regard.
- HCL Technologies and TCS maintained a shareholder's equity ratio of over 70% throughout the study period, indicating a robust financial position.
- TCS displayed efficiency in capital employed utilization compared to WIPRO and HCL.
- WIPRO's equity dividend coverage ratio showed promise, while TCS and HCL Technologies' ratios indicated stable businesses with conservative dividend distribution policies.
- TCS consistently maintained a high net asset value per share compared to WIPRO and HCL Technologies, suggesting substantial reserves and potential.
- WIPRO and HCL Technologies' market price to net asset value per share remained low compared to TCS, indicating superior returns for WIPRO and HCL investors.
- TCS exhibited a liberal distribution policy with a consistently high dividend pay-out ratio exceeding 35%, while HCL Technologies' ratio also surpassed 10%, albeit less generously than TCS. WIPRO followed a more conservative approach in dividend distribution.
- The dividend yield ratio of all selected companies exhibited a positive trend, reflecting a high dividend per share.
- Financial leverage analysis indicated low leverage for the sample companies, with diluted EPS resulting from increased equity.

Suggestions

- Indian IT firms are urged to explore international markets to diversify their operations, addressing the vulnerabilities arising from their heavy reliance on the US IT sector.
- Emphasizing the untapped potential within the domestic market, it is proposed that Indian IT companies redirect their focus to capitalize on local opportunities.
- To stay competitive amidst rising global and domestic competition, Indian IT enterprises are advised to enhance productivity through the reinforcement and upskilling of their workforce.
- Tailoring the capital structure's debt-to-equity proportions to industry dynamics and market conditions is essential. Failure to anticipate these factors may hinder the company's ability to secure favorable financing terms in the long run, impacted by evolving government policies.
- Opting for fixed-cost financing instruments such as debentures, loans, and preference shares is recommended when the return on investment surpasses fixed funding costs.
- Timely debt repayment is crucial to uphold the company's creditworthiness and avoid future obstacles in accessing additional financing.
- Long-term projects should be financed through equity and other long-term sources, while short-term initiatives are best suited for financing through debt instruments like bank loans and financial institution credit lines.

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EVALUATING BANDHAN BANK'S PERFORMANCE THROUGH THE CAMEL MODEL: A COMPREHENSIVE STUDY

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EVALUATING BANDHAN BANK'S PERFORMANCE THROUGH THE CAMEL MODEL: A COMPREHENSIVE STUDY

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Abstract

Examining a company's financial performance is vital for evaluating its overall well-being. In the banking sector, where its role in the economy is central, thorough supervision is necessary. The CAMEL rating model, known for its success, assesses banks in five critical areas: Capital Adequacy, Asset Quality, Management Quality, Earnings, and Liquidity. This model integrates quantitative analysis, including financial ratios, with a qualitative approach to enhance transparency and guide banks in taking corrective actions. Originating from the American banking system, the CAMEL model is an effective tool for appraising the financial conditions of banks, helping regulators identify institutions that may need special attention. This study utilizes the CAMEL model to analyse the performance of Bandhan Bank.

Key words:
CAMEL Model, Capital Adequacy, Financial performance, Bandhan Bank

1.1 Introduction

Analyzing a company's financial performance is crucial for understanding its fiscal health. Various methods and tools are available for investigating funding, financial management, and control. Financial performance analysis involves systematically evaluating a firm's profitability and financial well-being by closely examining its financial statements.

In the banking sector, essential for capital formation and the broader economy, vigilant oversight is necessary. The current banking supervisory system has significantly improved in frequency, coverage, and focus compared to its predecessors, aligning with many Basel core principles for Effective Banking Supervision.

To assess Indian Commercial Banks and Foreign Banks operating in India, two Supervisory Rating Models have been created: CAMEL (Capital Adequacy, Asset Quality, Management Quality, Earnings, Liquidity) and CACS (Capital, Asset Quality, Compliance, Systems & Control). These ratings help the Reserve Bank identify banks requiring special supervisory attention.

While various bank rating systems exist globally, the CAMEL rating system, notably the 'Uniform Financial Institutions Rating System (UFIRS),' stands out. Established in 1979, it evaluates banks based on five key areas: Capital Adequacy, Asset Quality, Management Capability, Earnings, and Liquidity.

The CAMEL model serves as a ratio-based internal rating, monitoring, regulatory, and supervisory tool for evaluating banks' financial conditions through on-site and off-site surveillance. It employs a systematic and methodical approach, fostering transparency, evolution, and transformation within financial institutions. The model combines quantitative analysis, including crucial financial ratios, with a qualitative approach that considers subjective elements supporting financial institutions' operations. It proves to be an effective internal rating tool, guiding banks to take remedial actions to avert failure. Notably, the CAMEL Rating System originated from the American banking system, evaluating a bank's strength across five categories, utilizing a scale ranging from one (best) to five (worst).

2. Research Methodology
2.1 Objectives of the Study

- To analyse the liquidity status of Bandhan Bank.

- To measure the bank's asset management performance through the CAMEL model.
- To examining the Bandhan bank's earnings and profitability.
- To assess the Bandhan Bank's capital adequacy using CAMEL model ratios.
- To provide meaningful suggestions to enhance the well-being of Bandhan Bank's stakeholders.

2.2 Scope and Period of the Study
This study evaluates Bandhan Bank's financial performance over a 5-year period using the CAMEL model. Data was collected from the bank's annual reports spanning 2018-2019 to 2022-2023. The goal is to qualitatively assess Bandhan Bank's financial performance based on CAMEL model parameters.

2.3 Tools for Analysis
CAMEL Rating System Overview
The CAMEL rating system comprehensively evaluates banks' overall health and performance, ensuring stability and regulatory compliance.

3. Analysis of Data
3.1 Capital Adequacy (C): This aspect centres on a bank's capacity to absorb unforeseen losses and uphold depositor confidence. Key indicators, such as Capital Adequacy Ratio (CAR), Debt-Equity Ratio, and relevant financial ratios, are examined in the current study.

3.1.1 Capital Risk Adequacy Ratio (CRAR) of Bandhan Bank					
	Capital Fund				
Year	Tier I	Tier II	Total	Total risk weighted assets	Capital risk adequacy ratio (%)
2018-2019	3307	283	3590	12375	29.01
2019-2020	4422	283	4705	17853	26.35
2020-2021	9230	359	9589	30460	31.48
2021-2022	10676	506	11182	38297	29.19
2022-2023	14846	1319	16165	58929	27.43
3.1.2 Debt Equity Ratio of Bandhan Bank					
		Total Shareholders Fund/ Equity			
Year	Debt /Borrowings	Share Capital	Reserves	Total	Debt Equity Ratio
2018-2019	3056	1095	2239	3334	0.92
2019-2020	1023	1095	3351	4446	0.23
2020-2021	280	1192	8189	9381	0.03
2021-2022	524	1193	10008	11201	0.05
2022-2023	16371	1610	13585	15195	1.08
3.1.3 Total advances to Total Assets ratio of Bandhan Bank					
Year	Total Advances	Total Assets	Total advances to Total Assets ratio		
2018-2019	12437	19915	0.62		
2019-2020	16839	30236	0.55		
2020-2021	29711	44310	0.67		
2021-2022	39643	56442	0.7		
2022-2023	66629	97117	0.68		
3.1.4 Government securities to Total Investments Ratio of Bandhan Bank					
Year	Government Securities	Total Investments	Government securities to Total Investments Ratio		
2018-2019	3757	3758	0.99		
2019-2020	5518	5520	0.99		
2020-2021	7772	8372	0.92		

2021-2022	9209	10037	0.91
2022-2023	14651	15322	0.95

Source: Annual Reports of Bandhan Bank from 2018-2019 to 2022-2023

3.2 Asset Quality (A): Asset quality examines a bank's loan portfolio and borrower risk, including factors like Non-Performing Assets (NPAs), the quality of government securities investments, and loan provisioning. The present study focuses on specific ratios related to asset quality.

3.2.1 Total Investment to Total Assets ratio of Bandhan Bank			
Year	Total investment	Total Assets	Total Investment to Total Assets ratio
2018-2019	3758	19915	0.19
2019-2020	5520	30236	0.18
2020-2021	8372	44310	0.18
2021-2022	10037	56442	0.17
2022-2023	15322	97117	0.16
3.2.2 Gross NPA to Total Advances Ratio of Bandhan Bank			
Year	Gross NPA	Total Advances	Gross NPA Ratio
2018-2019	19	12437	0.02
2019-2020	86	16839	0.05
2020-2021	373	29711	0.12
2021-2022	819	39643	0.22
2022-2023	993	66629	0.14
3.2.3 Net NPA to Total Advances Ratio of Bandhan Bank			
Year	Net NPA	Total Advances	Net NPA Ratio
2018-2019	10	12437	0.01
2019-2020	61	16839	0.03
2020-2021	173	29711	0.05
2021-2022	228	39643	0.06
2022-2023	389	66629	0.06

Source: Annual Reports of Bandhan Bank from 2018-2019 to 2022-2023

3.3 Management Efficiency (M): Management efficiency evaluates a bank's leadership in business generation and profit maximization, considering indicators like operating expenses and deposit interest expenses. The present study focuses on specific ratios related to management efficiency.

3.3.1 Total advances to Total deposits Ratio of Bandhan Bank			
Year	Total Advances	Total Deposits	Total advances to Total deposits Ratio	
2018-2019	12437	12088	1.02	
2019-2020	16839	23228	0.72	
2020-2021	29711	33869	0.87	
2021-2022	39643	43232	0.91	
2022-2023	66629	57082	1.16	

3.3.2 Business per Employee ratio of Bandhan Bank					
	Business (Rs in crores)				
Year	Deposits	Advances	Total	No of Employees	Business per Employee ratio
2018-2019	12088	12437	24525	20548	1.19
2019-2020	23228	16839	40067	24220	1.65
2020-2021	33869	29711	63580	28159	2.25
2021-2022	43232	39643	82875	31973	2.5
2022-2023	57082	66629	123711	45549	2.72

3.3.3 Profit per Employee ratio of Bandhan Bank					
Year	Net Profit	Total Employees	Profit per Employee ratio		
2018-2019	275	20548	0.01		
2019-2020	1111	24220	0.04		
2020-2021	1345	28159	0.05		
2021-2022	4009	31973	0.13		
2022-2023	6242	45546	0.14		

Source: Annual Reports of Bandhan Bank from 2018-2019 to 2022-2023

3.4 Earnings Capacity (E): Earnings capacity assesses a bank's profit generation and sustainability for future growth, examining metrics like Return on Assets (ROA), Return on Equity (ROE), and income composition. The present study concentrates on specific ratios related to earnings capacity.

3.4.1 Dividend Payout Ratio of Bandhan Bank			
Year	Dividends	Net Profits	Dividend Payout Ratio
2018-2019	0	275	0
2019-2020	0	1111	0
2020-2021	0	1345	0
2021-2022	143	1952	0.07
2022-2023	608	3023	0.2
3.4.2 Return on Assets Ratio of Bandhan Bank			
Year	Net Profits	Total Assets	Return on Assets ratio
2018-2019	275	19915	0.01
2019-2020	1111	30236	0.04
2020-2021	1345	44310	0.03
2021-2022	1952	56441	0.03
2022-2023	3023	97117	0.03
3.4.3 Return on Equity Ratio of Bandhan Bank			
Year	Net Profits	Shareholder's Equity	Return on Equity ratio
2018-2019	275	1095	0.25
2019-2020	1111	1095	1.01
2020-2021	1345	1192	1.13
2021-2022	1952	1193	1.64
2022-2023	3023	1610	1.88
3.4.4 Interest Income to Total Income Ratio of Bandhan Bank			
Year	Interest Income	Total Income	Interest income to Total Income Ratio
2018-2019	1581	1731	0.91
2019-2020	3908	4320	0.9
2020-2021	4802	5508	0.87
2021-2022	6643	7706	0.86
2022-2023	10885	12435	0.88
3.4.5 Other Income to Total Income Ratio of Bandhan Bank			
Year	Other Income	Total Income	Other Income to Total Income Ratio
2018-2019	149	1731	0.08
2019-2020	411	4320	0.09
2020-2021	706	5508	0.12
2021-2022	1063	7706	0.13
2022-2023	1549	12435	0.12

Source: Annual Reports of Bandhan Bank from 2018-2019 to 2022-2023

3.5 Liquidity Management (L): Liquidity management gauges a bank's capability to fulfill financial obligations, examining ratios like liquid assets as a percentage of total assets, investments in government securities, and handling demand deposits. The present study concentrates on specific liquidity ratios.

3.5.1 Liquid Asset to Total Assets Ratio of Bandhan Bank			
Year	**Liquid Assets**	**Total Assets**	**Liquid Assets to Total Assets Ratio**
2018-2019	3173	19915	0.15
2019-2020	7364	30236	0.24
2020-2021	5510	44310	0.12
2021-2022	5802	56441	0.1
2022-2023	8352	97117	0.09
3.5.2 Government Security to Total Assets Ratio of Bandhan Bank			
Year	**Government Securities**	**Total Assets**	**Government Securities to Total Assets Ratio**
2018-2019	3757	19915	0.19
2019-2020	5518	30236	0.18
2020-2021	7772	44310	0.17
2021-2022	9209	56441	0.16
2022-2023	14651	97117	0.15
3.5.3 Approved Securities to Total Assets ratio of Bandhan Bank			
Year	**Approved Securities**	**Total Assets**	**Approved Securities to Total Assets Ratio**
2018-2019	2	19915	0.01
2019-2020	2	30236	0.06
2020-2021	645	44310	1.44
2021-2022	837	56441	1.47
2022-2023	701	97117	0.72
3.5.4 Liquid Assets to Demand Deposit Ratio of Bandhan Bank			
Year	**Liquid Assets**	**Demand Deposits**	**Liquid Assets to Demand Deposits Ratio**
2018-2019	3173	234	13.78
2019-2020	7364	1452	5.07
2020-2021	5510	2415	2.28
2021-2022	5802	3609	1.61
2022-2023	8352	3301	2.53
3.5.5 Liquid Asset to Total Deposit Ratio of Bandhan Bank			
Year	**Liquid Assets**	**Total Deposit**	**Liquid assets to Total Deposits ratio**
2018-2019	3173	12088	0.26
2019-2020	7364	23228	0.32
2020-2021	5510	33869	0.16
2021-2022	5802	43232	0.13
2022-2023	8352	57082	0.15

Source: Annual Reports of Bandhan Bank from 2018-2019 to 2022-2023

3.6 Overall Composite CAMEL Rankings of Bandhan Bank

Year	C	A	M	E	L	SUM	Average	Rank
2018-2019	7.89	0.07	0.74	0.25	2.87	11.82	2.36	I
2019-2020	7.03	0.08	0.80	0.41	1.17	9.48	1.89	V
2020-2021	8.28	0.11	1.07	0.43	0.83	10.72	2.14	II
2021-2022	7.71	0.15	1.18	0.54	0.69	10.27	2.05	IV

| 2022-2023 | 7.53 | 0.12 | 1.34 | 0.62 | 0.73 | 10.34 | 2.06 | III |

Table 3.6 displays Bandhan Bank's composite ranking based on CAMEL parameters during the study period. The bank's rankings are as follows: Ranked I in 2018-2019, Ranked II in 2020-2021, Ranked III in 2022-2023, Ranked IV in 2021-2022, and Ranked V in 2019-2020.

Key Findings: Bandhan Bank achieved its highest Capital Adequacy in 2020-2021 at 8.28. Asset quality stood out in 2018-2019 with a score of 0.07. Management efficiency peaked in 2022-2023, scoring 1.34. Earning capacity reached its maximum in 2021-2022. However, the bank's liquidity position showed a gradual decline from 2.87 in 2018-2019 to 0.69 in 2021-2022.

Overall Assessment: The study indicates that Bandhan Bank consistently held the third position in the CAMEL model ranking from 2018-2019 to 2022-2023. To improve future rankings, the bank should focus on enhancing its liquidity.

4. FINDINGS, SUGGESTIONS AND CONCLUSION
4.1 Findings
4.1.1 Capital adequacy (C)
Capital Adequacy Ratio: Bandhan Bank's ratio gradually declined, dropping from 29.01% in 2018-2019 to 26.35% in 2019-2020 but reached its peak at 31.48% in 2020-2021.

Debt-Equity Ratio: The bank's Debt-Equity Ratio decreased from 0.92 in 2018-2019 to 0.05 in 2021-2022 but raised concerns by rising to 1.08 in 2022-2023, indicating reduced protection for creditors.

Total Advances to Total Assets Ratio: Bandhan Bank's ratio fluctuated, reaching its highest at 0.70 in 2021-2022, highlighting the bank's capacity for maximum interest income from lending.

Government Securities to Total Investment Ratio: Throughout the study period, Bandhan Bank consistently maintained a high ratio of Government securities to total investment, with over 90% of investments allocated to ensure stability in returns.

4.1.2 Asset Quality (A)
Total Investments to Total Assets Ratio: Bandhan Bank achieved its highest ratio at 0.19 in 2018-2019, gradually decreasing to 0.15 in subsequent years. A higher ratio indicates the bank's effectiveness in safeguarding against Non-Performing Assets (NPAs).

Gross NPA to Total Advances Ratio: The ratio showed a continuous increase from 2018-2019 to 2022-2023, reaching its highest at 0.22 in 2021-2022. This unfavourable indicator suggests challenges in the bank's debt management.

Net NPA to Total Advances Ratio: The Net NPA to Total Advances Ratio increased from 0.01 in 2018-2019 to 0.06 in 2022-2023. While this rise doesn't significantly impact Bandhan Bank's asset quality compared to the Gross NPA ratio, it indicates a noteworthy change.

4.1.3 Management Efficiency (M)
Total Advances to Total Deposits Ratio: The ratio fluctuated, reaching its peak at 1.16 in 2022-2023, indicating that for every rupee deposited, there are 1.16 rupees in advances.

Business per Employee: Bandhan Bank's Business per Employee consistently increased from 1.19 to 2.72 during the study period from 2018-2019 to 2022-2023, marking a notable upward trend.

Profit per Employee: The Profit per Employee ratio consistently rose over the study period, reaching its highest at 0.14 in 2022-2023, with Net Profits of Rs. 6,242 crores and a total of 45,546 employees.

4.1.4 Earning Capacity (E)
Dividend Payout: Bandhan Bank refrained from declaring dividends from 2015-2016 to 2017-2018. In 2018-2019, dividends of Rs 143 crores were declared, resulting in a 0.07 dividend payout ratio. This ratio increased to 20% in 2019-2020 from the previous year's 7%.

Return on Assets (ROA): ROA increased from 0.01 in 2018-2019 to 0.04 in 2019-2020. However, it gradually decreased to 0.03 in 2020-2021 and remained constant in subsequent years up to 2022-2023.

Return on Equity (ROE): ROE showed an upward trend from 2018-2019 to 2019-2020, reaching its highest at 1.88 in 2022-2023. This indicates that Bandhan Bank increased profit generation without requiring additional capital.

Interest Income to Total Income Ratio: The ratio of Interest Income to Total Income slightly decreased from 0.91 in 2018-2019 to 0.86 in 2021-2022.

Other Income to Total Income Ratio: The Other Income to Total Income Ratio increased from 0.08 in 2018-2019 to 0.13 in 2021-2022.

4.1.5 Liquidity Management (L)

Liquid Assets to Total Assets Ratio: The highest ratio occurred in 2019-2020 at 0.24, while the lowest was in 2022-2023 at 0.09. This suggests the bank maintained a somewhat satisfactory level of liquid assets.

Government Securities to Total Assets Ratio: The ratio declined from 0.19 in 2018-2019 to 0.15 in 2022-2023, indicating an average annual decrease of 5% over the study period.

Approved Securities to Total Assets Ratio: The highest ratio was 1.47 in 2021-2022, with the lowest at 0.01 in 2018-2019, highlighting limited investments in approved securities.

Liquid Assets to Demand Deposits Ratio: The ratio showed a gradual decline from 13.78 in 2018-2019 to 1.61 in 2021-2022.

Liquid Assets to Total Depository Ratio: Fluctuating from 2018-2019 to 2022-2023, the ratio reached its highest point in 2019-2020, with the lowest at 0.13 in 2021-2022.

4.2 CAMEL Ratings for Bandhan Bank:

• Bandhan Bank's overall performance is assessed using a composite rating in the CAMEL model, ranging from A+ to D. A+ signifies the best performance, while C and D ratings indicate a need for an extreme level of supervisory concern.

Rating symbol	Rating symbol indicates
A+	The bank is sound in all aspects.
A	The bank is fundamentally sound but exhibits moderate weaknesses.
B	Financial, operational, or compliance weaknesses that raise supervisory concerns.
C	Serious or substantial financial, operational, and managerial weaknesses that may pose a risk to future stability.
D	Severe financial weakness with a high likelihood of imminent failure.

The study reveals that Bandhan Bank excelled in the Capital Adequacy parameter, securing the top position. However, the Asset Quality parameter was rated as moderate. Notably, the Management Efficiency parameter showed an increasing trend, followed by an upward trajectory in the Earning Capacity parameter. Bandhan Bank's Liquidity position was assessed as average. Consequently, the overall rating assigned to Bandhan Bank for the study period spanning 2018-2019 to 2022-2023 is "B."

4.3 Suggestions

4.3.1 Optimize Capital Adequacy: Bandhan Bank, having a Capital Adequacy Ratio (CAR) that exceeds RBI requirements, should prioritize maintaining this peak level in the upcoming years.

4.3.2 Prudent Borrowing: Caution is advised for Bandhan Bank in managing its Debt Equity ratio, especially in 2022-2023 when borrowing increased significantly. Minimizing reliance on creditors, considering fixed interest obligations, is recommended.

4.3.3 Control Non-Performing Assets (NPA): Maintaining a minimal level of NPA is crucial for enhancing lending performance. Investment in quality assets generating returns through interest and profits is emphasized.

4.3.4 Enhance Employee Productivity: Despite an upward trend in Business per Employee and Profit per Employee, measures can be implemented to ensure even greater efficiency and productivity among employees.

4.3.5 Consistent Dividend Declaration: Bandhan Bank should consider regular dividend declarations to shareholders, particularly with the Dividend Payout Ratio increasing from 7% to 20% in recent years.

4.3.6 Diversify Income Streams: To reduce reliance on interest income, exploring non-interest income avenues like modern banking services, mutual funds, and credit card services is recommended.

4.3.7 Sustain Return on Equity (ROE): Bandhan Bank should aim to maintain the upward trend in ROE in the coming years.

4.3.8 Optimize Return on Assets (ROA): Improving ROA involves more effective utilization of assets to enhance overall profitability.

4.3.9 Diversify Investments: The bank should consider diversifying investments beyond government securities to include other approved securities, such as bonds and shares of regional rural banks.

4.3.10 Maintain Adequate Cash Reserves: Ensuring that cash reserves align with demand deposits is crucial for sustaining liquidity ratios.

4.4 Conclusion:

Utilizing Annual Reports from 2018-2019 to 2022-2023, the study applied the CAMEL rating method to assess Bandhan Bank's financial strength in diverse categories. The results indicated the bank's satisfactory performance in Capital Adequacy and Earning capacity, along with strong Management Efficiency. However, asset utilization efficiency was moderate, and Liquidity Management fell short. Overall, Bandhan Bank excelled in most areas but needs improvement in its liquidity position.

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A COMPARATIVE STUDY ON CONSUMER'S SATISFACTION TOWARDS ONLINE AND OFFLINE SHOPPING OF CONSUMER GOODS WITH REFERENCE TO MADURAI CITY

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A COMPARATIVE STUDY ON CONSUMER'S SATISFACTION TOWARDS ONLINE AND OFFLINE SHOPPING OF CONSUMER GOODS WITH REFERENCE TO MADURAI CITY

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ABSTRACT
Recognizing consumers as the linchpin of the market is a universally acknowledged truth. Understanding consumer satisfaction during the purchasing process is pivotal, given the diverse modes available—offline and online purchases. It is imperative to discern the most favoured purchase method, exploring the rationale behind choosing online or offline shopping. This study aims to uncover the factors steering consumers' choices, delving into the affordability aspect and identifying features that influence preferences in both online and offline shopping. Conducting research in Madurai District, the study involves 126 respondents selected through a convenient sampling technique to investigate their behaviours regarding online and offline shopping. The research further scrutinizes various factors constraining consumers in both modes. The primary objective is to uncover the challenges consumers encounter during online and offline shopping, providing valuable insights into the complexities that shape their behavior in these contexts. Ultimately, this research seeks to contribute to a nuanced understanding of consumer dynamics, informing businesses and policymakers to enhance the overall shopping experience by addressing these influential factors.
Keywords: Online, offline, Products, shopping.

1.1 INTRODUCTION

Shopping has become an integral part of our daily lives, and individuals often opt for either offline or online methods, with some engaging in both. In today's world, customer satisfaction hinges on the consistent availability of diverse, high-quality, accessible, and cost-effective goods. Traditional market purchases have endured over the years, driven by the desire for a personal touch, direct examination, and immediate ownership after payment.

In the competitive landscape, online shopping has gained prominence due to its advantages in terms of availability, accessibility, speed, ease, and cost-effectiveness. While offline shopping retains its significance for accessibility, the majority now favours online shopping for its convenience, simplicity, and lower prices. When making purchasing decisions, consumers must consider the medium and mode of payment for both online and offline transactions. It is crucial for consumers to select channels that align with their needs and preferences, providing satisfaction.

This study seeks to conduct a Comparative Study on Consumer Satisfaction regarding Online and Offline Shopping of Consumer Goods, specifically within Madurai City. The objective is to identify the factors influencing consumer satisfaction levels in both online and traditional shopping, recognizing the evolving dynamics that shape the preferences and contentment of consumers in the realm of purchasing consumer goods.

1.2 REVIEW OF LITERATURE

Sameeha M.S.F. and Milhana U.L (2022)," Comparative study of Traditional shopping and online Shopping" found that the significant majority of participants recognized a price disparity that favored online shopping. Meanwhile, traditional shopping was acknowledged for its safety advantages and the opportunity for direct product comparisons.

Ms.Jayashri Sadanand Lokhande (2022), " Online and Offline Shopping: A Comparative study" brought attention to the favorable attitudes exhibited by both younger and older age demographics towards online shopping. The study underscored the significance of factors

such as secure online payment methods and demographic variables, including gender, age, and education, in influencing consumer behavior in the realm of web-based shopping.

Pravin Laxman Thorat (2021), " Study of Customer Satisfaction towards Online and Offline Shopping" which delved into the impact of price comparison and the convenience associated with online shopping on overall customer satisfaction. The study also recognized the challenge of evaluating product quality as a pertinent factor influencing satisfaction levels in both online and offline shopping experiences.

Mrs. **B.Lakshmi1, Dr. Hansa Lysander Manohar (2021) " Online VS. Offline Shopping – A Comparative study** observed that 60% of survey participants believed that online shopping allowed them to efficiently save valuable time. Furthermore, 20% of respondents appreciated the convenience of directly shipping gifts through online platforms, while 13% noted the advantage of viewing items that might not be readily available in physical stores. Additionally, 7% of the participants stated that online shopping facilitated easier organization of their finances.

STATEMENT OF THE PROBLEM

Consumer purchasing behaviors have undergone significant transformations over the years, propelled by technological advancements that empower businesses to deliver services with unprecedented precision and accessibility. Despite these advancements, a considerable number of shoppers still favor traditional offline shopping compared to its online counterpart. The decision to opt for online or offline shopping varies among individuals, influenced by factors ranging from convenience to competitive pricing. This study aims to comprehensively compare the satisfaction levels of consumers in the context of online and offline store shopping, exploring the nuanced dynamics that shape their preferences in the evolving retail landscape.

1.3   OBJECTIVES OF THE STUDY

1.   To analysis the awareness of consumers towards online and offline shopping.
2.   To identify the factors influencing consumer on online and offline shopping.
3.   To assess level of satisfaction of consumer towards online and offline shopping.
4.   To find out challenges and difficulties faced by consumers through online and offline purchase and offer suitable suggestions.

1.4   SCOPE OF THE STUDY

The current study delves into gauging consumer satisfaction in the procurement of goods through both online and offline channels. Its objective is to assess the factors that impact consumers in making purchase decisions. The emphasis is on comparing consumer behavior in online and offline transactions for specific products. By identifying challenges in both online and offline purchases, the study aims to contribute to a more adaptable shopping experience, ultimately enhancing consumer satisfaction levels.

2.   RESEARCH METHODOLOGY

The research focused on the population residing in Madurai City. To gather primary data, a meticulously crafted questionnaire was employed. A convenient sampling method was applied to select a sample size of 126 respondents from Madurai city. Supplementary data was obtained from diverse sources including official websites, books, prior research studies, publications, articles, and journals. The collected data underwent analysis utilizing techniques such as Percentage Analysis, Weighted Average, Mean Score, Standard Deviation, One-way ANOVA, and the Likert scale method.

3.   RESULTS AND DISCUSSION

Table 3.1

Product Purchased through Online and Offline Shopping

Type of Product	Online Shopping		Offline Shopping	
	Respondents	**Percentage**	**Respondents**	**Percentage**
Snacks	12	10%	114	90%
Groceries	22	17%	104	83%
Fruits & vegetables	4	3%	122	97%
Books & stationeries	38	30%	88	70%
Newspapers & magazines	10	7%	116	93%
Accessories	66	52%	60	48%
Toys and games	55	44%	71	56%
Home care	44	35%	82	65%
Health and wellness	15	11%	111	89%
Personal care	37	29%	89	71%
Electronic goods	48	38%	78	62%
Furniture	23	18%	103	82%
Home appliances	45	36%	81	64%

Source: Primary Data

As illustrated in Table 3.1, among the 126 respondents, approximately 52% opted for online platforms to purchase accessories. In contrast, a notable 97% chose offline channels for acquiring Fruits & vegetables. Furthermore, 93% of the respondents preferred offline methods for purchasing newspapers & magazines, while 90% utilized online avenues for obtaining snacks. The data reveals a clear inclination among respondents to engage in online shopping for items like accessories and electronic goods, whereas they predominantly relied on offline shopping for the acquisition of Fruits & vegetables, closely followed by newspapers & magazines.

Table 3.2

Level of Awareness on Product Features through Online and Offline Shopping

Awareness About Product Features	Online Shopping							Offline Shopping						
	5	**4**	**3**	**2**	**1**	**MEAN**	**RANK**	**5**	**4**	**3**	**2**	**1**	**MEAN**	**RANK**
Colour	37	62	20	2	5	3.98	VIII	71	40	12	1	2	4.41	I
Design	45	61	8	7	5	4.06	VI	54	57	7	1	2	4.15	IX
Quantity	44	54	14	3	6	3.89	XI	68	40	14	2	2	4.35	II
Quality	53	47	15	3	8	4.06	VI	66	44	9	4	3	4.32	III
Cost	53	51	14	4	4	4.15	I	67	38	13	4	4	4.27	V
Discount/offer	45	54	19	4	4	4.07	V	55	42	21	5	3	4.12	X
Delivery	46	61	13	3	3	4.14	II	56	37	23	6	4	4.07	XII
Brand	47	54	17	4	4	4.08	IV	67	35	22	1	1	4.32	III
Manufacturer	28	51	35	3	9	3.68	XII	50	44	26	5	1	4.09	XI
Affordability	35	60	22	5	4	3.93	X	59	48	15	2	2	4.27	V
Availability	38	55	25	3	5	3.94	IX	59	42	22	1	2	4.23	VII
Product Variety	51	51	16	4	4	4.12	III	58	43	15	7	3	4.16	VIII

Source: Computed Data

Table 3.2 indicates that in online shopping, cost takes the top rank with a mean score of 4.15, closely trailed by delivery and the variety of products, each scoring 4.14 and 4.12, respectively. On the other hand, in offline shopping, color secures the leading position with a mean score of 4.41, followed by quantity at 4.35, and quality and brand, both obtaining a mean score of 4.32.

Table 3.3

Factors influencing the Purchase through Online Shopping and Offline Shopping

Factors	Online Shopping							Offline Shopping						
	SA	A	NO	DA	SDA	Mean	Rank	SA	A	NO	DA	SDA	Mean	Rank
Offers more varieties of products	52	54	12	4	4	4.16	I	54	49	21	2	4	4.26	I
Premium brands are available	37	65	19	4	1	4.06	V	34	61	28	2	1	4.00	IV
Taste and preference	42	53	25	5	1	4.03	VI	37	54	26	5	4	3.91	VI
Product availability	43	50	24	8	1	4	VIII	29	57	29	9	2	3.81	VIII
Service on 24 * 7 basis	46	51	22	6	1	4.07	IV	31	45	38	7	5	3.71	XI
Quick selection	45	57	18	8	1	4.16	I	39	55	23	6	3	3.96	V
Product comparison of prices	45	50	18	6	7	3.95	IX	33	55	25	7	6	3.81	VIII
Preference cash on delivery,	47	55	16	6	2	4.10	III	43	56	18	7	2	4.04	III
Digital Payment	38	59	23	4	2	4.01	VII	37	65	19	3	2	4.05	II
Regular offers and discount	29	60	28	8	1	3.86	XI	27	55	31	12	1	3.75	IX
Availability of special offers	30	55	29	9	3	3.79	XII	23	60	33	8	2	3.75	IX
Product exchange value.	33	56	25	11	1	3.87	X	36	45	35	9	1	3.84	VII

Source: Computed Data

As outlined in Table 3.3, online shopping is characterized by the top-ranking factor of providing a diverse array of products, with quick selection securing the first position and earning a mean score of 4.16. The third and fourth ranks are occupied by the preference for cash on delivery and the availability of 24*7 services, respectively, each with mean scores of 4.07. Conversely, offline shopping excels in offering a greater variety of products, obtaining the first position with a mean score of 4.26. Digital payment secures the second rank with a mean score of 4.05, while the preference for cash on delivery attains the third rank with a mean score of 4.04.

Table 3.4
Level of Satisfaction on Shopping Consumer Goods through Online and Offline

	Online Shopping							Offline Shopping						
	HS	S	N	DS	HDS	Mean	Rank	HS	S	N	DS	HDS	Mean	Rank
Availability	51	49	18	5	3	4.11	I	40	54	25	3	4	3.98	IV
Brand name	32	65	20	5	4	4.08	II	33	33	45	6	8	3.59	XII
product Comparison	35	53	28	7	3	3.87	VIII	33	33	46	8	5	3.62	XI
Payment option	42	53	20	9	2	3.98	III	43	57	19	5	2	4.06	I
price Comparison	37	54	22	9	4	3.88	VII	33	57	26	8	2	3.88	VIII
customer care service	26	56	33	8	3	3.75	X	36	60	21	7	2	3.96	VI
payment modes	35	65	18	5	3	3.98	III	38	64	12	5	7	3.96	VI
credit/ debit cards Acceptance	41	54	22	6	3	3.98	III	39	51	22	7	7	3.86	IX
Attractive schemes and offers	36	56	22	11	1	3.91	VI	21	67	24	8	6	3.71	X
Maintain customer profile	29	52	30	9	6	3.71	XI	36	57	28	4	1	3.97	V
Safety payment mechanism	36	51	27	9	3	3.86	IX	40	60	19	5	2	4.04	III
Promptness in dealing queries.	25	54	36	8	3	3.70	XII	39	65	16	3	3	4.05	II

Source: Computed Data

As depicted in Table 3.4, it is evident that in online shopping, the foremost factor is the availability of products, securing the top position with the highest mean score of 4.11. Branding follows closely behind, attaining the second rank with a mean score of 4.08, while the third position is held by payment options, payment modes, and the acceptance of credit/debit cards, garnering a mean score of 3.98.

On the other hand, offline shopping places a premium on the availability of payment options, claiming the top rank with a mean score of 4.06. The second position is occupied by the promptness in dealing with queries, achieving a mean score of 4.05, and the third rank is attributed to the safety and security of the payment mechanism, earning a mean score of 4.04.

Table 3.5
Difficulties faced by the respondents during Online and Offline Shopping

	ONLINE SHOPPING							OFFLINE SHOPPING						
	5	4	3	2	1	Mean	Rank	5	4	3	2	1	Mean	Rank
Response of customer care	36	35	36	12	7	3.64	III	39	39	28	10	10	3.69	VIII
Replacement procedures	23	51	36	11	5	3.60	VI	27	46	37	9	12	3.65	IX
Packaging	30	43	33	11	9	3.59	VII	32	38	33	11	12	3.53	XVI
Personalized services	25	51	24	19	7	3.54	X	33	45	26	11	11	3.62	IX
Insufficient description	26	41	31	23	5	3.48	XII	31	45	30	9	11	3.60	XI
High delivery charges	24	40	36	17	9	3.42	XVI	42	47	21	8	8	3.85	III
Hidden terms and conditions	28	35	39	13	11	3.44	XIV	49	37	25	7	8	3.89	I
Difficulty in payment options	36	38	35	12	5	3.70	I	41	42	28	10	5	3.83	IV
Door delivery	31	38	28	15	14	3.45	XV	44	34	27	10	11	3.75	VI
product variation	32	29	40	17	8	3.47	XIII	41	41	28	8	8	3.79	V
Availability of desired product	31	37	35	18	5	3.56	VIII	28	45	34	12	7	3.60	XI
Discount & offer	34	40	30	15	7	3.63	V	27	45	33	15	6	3.57	XIV
physical verification	30	43	33	17	3	3.64	III	31	41	34	12	8	3.59	XIII
Slow checkout time	34	42	29	17	4	3.67	II	32	50	28	10	6	3.73	VII
Lack of products/services	26	47	32	14	7	3.56	VIII	30	39	38	10	9	3.56	XV
cost variation	27	45	31	15	8	3.54	X	27	48	31	15	5	3.61	X
Retailer' s behaviour	21	45	31	11	18	3.32	XVII	45	41	25	6	9	3.89	I

Source: Computed Data

Table 3.5 highlights notable observations regarding challenges in online and offline shopping. In the context of online shopping, the primary issue is identified as difficulty in payment options, ranking first with a mean score of 3.70. Following closely are concerns about slow checkout times, securing the second position with a mean score of 3.67, while the response of customer care and the absence of physical verification rank third with a mean score of 3.64.

Conversely, offline shopping poses its own set of challenges, with hidden terms and conditions and retailer behavior emerging as the foremost problems, earning the top position with a mean score of 3.89. High delivery charges closely trail behind, securing the second rank with a mean score of 3.85.

Table 3.6
Socio- economic factors and level of satisfaction towards Online and Offline Shopping

Socio- economic factors	Shopping mode	MEAN	STD DEV	F	P Value
Age	Online Shopping	41.73	15.09	.631	.642
	Offline Shopping	39.44	14.72	1.901	.115
Gender	Online Shopping	22.62	7.43	.626	.645
	Offline Shopping	21.87	7.08	.529	.715
Type of family	Online Shopping	41.73	15.09	.413	.799
	Offline Shopping	39.44	14.72	.517	.724
Educational Qualification	Online Shopping	47.94	7.21	3.663	**.007**
	Offline Shopping	46.76	7.49	0.126	.973
Occupation	Online Shopping	46.67	8.35	2.762	**.031**
	Offline Shopping	46.76	6.48	.187	.945
Income	Online Shopping	47.94	7.21	1.620	.174
	Offline Shopping	46.76	7.49	3.273	**.014**

Source: Computed Data

Table 3.6 provides clear insights, indicating that the p-values associated with educational qualification, occupation, and income are deemed significant concerning the level of satisfaction in both online and offline shopping. Consequently, the null hypothesis is rejected, and the alternative hypothesis is accepted.

4   SUGGESTIONS

1.   Customers play a pivotal role in the market, prompting sellers to take measures to minimize delivery waiting times in online shopping.
2.   In the realm of online shopping, it is crucial for sellers and distributors to prioritize consumer privacy. Additionally, expanding the Cash on Delivery facility to encompass all types of products requires concerted effort.
3.   Emphasizing the confirmation of product quality through catalogs in online shopping can mitigate issues related to quality. Improving website loading speed is imperative to enhance the ease of online shopping for consumers.
4.   Soliciting feedback from customers through offline shopping channels is essential for merchants to gauge and elevate customer satisfaction levels.
5.   The research recommends that traditional shopping experiences should be optimized by providing information on product availability and prices. Simultaneously, online shopping platforms should focus on facilitating return processes and implementing robust security measures to ensure customer confidence.

CONCLUSION

This study aims to investigate consumer satisfaction in both online and offline shopping within its defined scope and limitations. The research provides precise insights into consumer satisfaction, serving as a valuable resource for consumers in the future. Both online and offline shopping modes have played a substantial role in influencing consumer satisfaction levels. Therefore, the implementation of the suggestions proposed in this study by marketers and policymakers in the near future has the potential to elevate overall consumer satisfaction in both online and offline shopping experiences.

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A STUDY ON CHALLENGES FACED BY WOMEN EMPOWERMENT IN TODAY'S SOCIETY

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Abstract

This paper seeks to analysis state of women empowerment in India and sheds light on its problems and challenges. Today women's empowerment has become one of the most important concerns of the 21ˢᵗ century. Since the beginning of the twentieth century their position has gradually and gradually changed. The study found that women in India are relatively underdeveloped and despite many efforts by the government are somewhat inferior to men. Gender gaps exist regarding access to education and employment. The power of dedication-making at home and the freedom of movement of women vary greatly in their age, education and employment status. It has been found that the acceptance of unequal sex norms by women is still prevalent in the society. Rural women are more likely to experience domestic violence that urban women. The gender gap is also very large in political participation. The study concludes that access to education and employment are the only enabling factors, although the focus on goal attainment depends largely on the attitudes of people towards gender equality.

Key words: Women, Empowerment, Issues, Challenges, Violence against Women.

Introduction:

Women empowerment is defined as the process by which women improve their wellbeing by challenging the existing norms and culture of the society in which they live. Bali Swain (2007) and Bali Swain and Wallentin (2009) argue that greater efficiency in women's household chores or their performance within the existing social norms (as caregivers and household managers), do not lead to empowerment. Similarly, community development initiatives undertaken by the SHGs lead to household's welfare but do not directly empower women. In fact, they may help maintain the existing gender roles within a given society. Women empowerment takes place when women improve the quality of their life by resisting the gender-biased traditions and norms that reinforce gender discrimination[2]. Furthermore, women empowerment is multi-locational and exists in multiple domains and is a multi-dimensional process – Economic decision-making, for instance, does not necessarily imply that the woman can decide contraception use or contribute to non-financial decisions (Johnson, 2005; Malhotra and Mather, 1997 ; Kabeer, 1999). This makes alternative development initiatives, such as political quotas, awareness generation and property rights, important interventions for empowering women. (Deshmukh-Ranadive, 2003. Kabeer, 2005; Armendáriz and Morduch, 2010.

Whereas the economic factors have a significant impact on empowering women in the southern states of India in other states, autonomy in women's decision-making and network, communication and political participation show a significant correlation with women empowerment. There is no significant impact on women empowerment by the type of linkage model in the delivery of microfinance.

Challenges of Women Empowerment:

There are many challenges facing women's right's issues in India. Targeting this issue will directly benefit women's empowerment in India.

Education:

The country has taken a leap since independence and is concerned about education. The gap between women and men is wide. 82.14 % adult males are well educated, while in India only 65.46% of adult females are considered literate. Gender bias is in higher education. Specialized vocational training that strongly influences women in employment and achieves top leadership in any field.

Poverty:

Poverty is considered to be the biggest threat to world peace and eradication of poverty should be as important a national goal as eradication of illiteracy. This leads to the exploitation of women as domestic helpers.

Health and Safety:

Women's health and safety issue are paramount in the interest of the country and are important factors in the assessment of women's empowerment in the country. However, there are worrying concerns were mothers are concerned.

Unemployment:

It is becoming more and more difficult for women to find the right job for themselves. They become more vulnerable to exploitation and harassment in the workplace.

Statement of the Problem:

The modern world has been witnessing a positive trend in the empowerment of women despite their shortcomings in education and literacy, health and nutrition, training and employment generation, legislative and judicial reforms. The empowering strategies, however, need substantial fine-tuning to ensure the required results. As the vision for the future has to be built on gender perspective there is a need for a comprehensive and holistic policy for women which would enable the country to fulfill the constitutional mandate of women's equality and the objective of women's total involvement in the development of the nation. The policy should be so framed as to negate the distortions and gaps in the sectional policies and programmes and eliminate the social, cultural and political factors that inhibit women's participation.

Women need to be viewed not as beneficiaries but as active participants in the process of development and change. Their capacity to work, knowledge and skills are often the sole source of survival among the poor as often they are the manager of the household chores. Thus, women participation is essential in the process of reducing the level of poverty.

The fact that the earnings of poor women are mostly spent on the basic needs of the household as compared to that of male counterpart necessitates, women, to be made focal point of developmental at efforts. The success of any development programme for women depends largely on recognizing their problems and constraints and adopting a flexible approach in designing the policy programmes that can suit their specific needs. Direct involvement and active participation of women who are likely to be improved by the programmes is another aspect of the development. There is a need to introduce gender sensitivity at the project formulation stage and to promote the active involvement of women in implementing the project.

Review of Literature:

Bali (2007) states that the SHG interaction encourages women members to participate in the community, thereby making them more active in society and local politics.

Lokeshkumar Jain (2007) investigates the rural development management through the case study of illiterate lady Jyotsanbean Kantibhai Choudhary of Indrapura village who registered a landmark success by carrying out daily activities at grassroots level with the assistance of village level milk co-operative society. The study highlights her courage, entrepreneurial spirit as well as skills and scientific management approach towards fast-growing business. Her achievements had strongly appealed to forthcoming efforts for women empowerment and improvement in the standard of living with the critical situation of limited resources at local levan.

Vinayagamoorthy (2007) finds that both the income and household expenditure of women have increased after joining the SHGs. The higher incremental expenditure results in the slow increasing rate of savings. Mostly they are spending on personal consumption. The regular and timely repayment of loan makes the economic activities of the SHGs a great success. Thus the SHGs in North are found to show signs of developing women empowerment and rural areas as well.

Scope of the Study:

In the women empowerment successful growth in needs are well challenges faced by women empowerment in today's society. So, the poor conditions of women empowerment formed credit facilities to fulfil there economical, leadership, managerial empowerment needs. The researcher has attempted to study the help of empowerment.

Objectives:

To know the concept of women empowerment.

To study the violence against women in India.

To Identify the challenges in the part of women empowerment.

To make useful suggestions in the light of the findings.

Methodology and data collection:

This study consists of both the primary and secondary data.

The fact that the earnings of poor women are mostly spent on the basic needs of the household as compared to that of male counterpart necessitates, women, to be made focal point of developmental at efforts. The success of any development programme for women depends largely on recognizing their problems and constraints and adopting a flexible approach in designing the policy programmes that can suit their specific needs. Direct involvement and active participation of women who are likely to be improved by the programmes is another aspect of the development. There is a need to introduce gender sensitivity at the project formulation stage and to promote the active involvement of women in implementing the project.

Review of Literature:

Bali (2007) states that the SHG interaction encourages women members to participate in the community, thereby making them more active in society and local politics.

Lokeshkumar Jain (2007) investigates the rural development management through the case study of illiterate lady Jyotsanbean Kantibhai Choudhary of Indrapura village who registered a landmark success by carrying out daily activities at grassroots level with the assistance of village level milk co-operative society. The study highlights her courage, entrepreneurial spirit as well as skills and scientific management approach towards fast-growing business. Her achievements had strongly appealed to forthcoming efforts for women empowerment and improvement in the standard of living with the critical situation of limited resources at local levan.

Vinayagamoorthy (2007) finds that both the income and household expenditure of women have increased after joining the SHGs. The higher incremental expenditure results in the slow increasing rate of savings. Mostly they are spending on personal consumption. The regular and timely repayment of loan makes the economic activities of the SHGs a great success. Thus the SHGs in North are found to show signs of developing women empowerment and rural areas as well.

Scope of the Study:

In the women empowerment successful growth in needs are well challenges faced by women empowerment in today's society. So, the poor conditions of women empowerment formed credit facilities to fulfil there economical, leadership, managerial empowerment needs. The researcher has attempted to study the help of empowerment.

Objectives:

To know the concept of women empowerment.

To study the violence against women in India.

To Identify the challenges in the part of women empowerment.

To make useful suggestions in the light of the findings.

Methodology and data collection:

This study consists of both the primary and secondary data.

Primary Data

Primary data will be collected through a well-structured interview schedule after a project as through pilot study. Based on the experience in the pilot study and discussion with the guide the interview schedule will be thoroughly revised to suit to collect the primary data from the respondents.

Secondary Data

Besides online sources the secondary data will be collected through journals, books, magazines and past studies related to this study.

Sampling Design

To collect primary data, 30 respondents will be selected based on proportionate random sampling method from the challenges faced by women Empowerment in today's society.

Tools for Analysis:

Components of Managerial Empowerment (CME)

The scores of all 17 variables in managerial empowerment have been included for factor analysis in order to narrate the variables into components of managerial component (CME). Initially, the validity of data for the factor analysis has been tested with the help of KMO measure of sampling adequacy and Bartlett's test of sphericity. Since the KMO measure is greater than 0.60 and chi-square is significant at zero percent level, the validity of data for factor analysis is confirmed. The overall reliability of variables in CME is tested by Cronbach alpha. The results are shown in Table 5.32

TABLE 5.32

Components of Managerial Empowerment (CME)

Sl. No.	CME	No. of Variables in	Eigen value	Per cent of variation explained	Cumulative per cent of variation explained
1.	Evaluation	6	4.0892	24.05	24.05
2.	Competence	5	3.6176	21.08	45.33
3.	Planning	3	2.8869	16.98	62.31
4.	Motivation	3	2.4173	14.22	76.53
KMO measure of sampling adequacy: 0.8309			Bartlett's test of Sphericity: Chi-square value: 94.09*		

*Significant at zero percent level.

Source: Computed data

Finding of the Study;

❖ A majority of SHG members belong to scheduled caste/tribe and backward class while a majority of respondents are below 25 years of age.

- ❖ The dominant level of education among the respondents is the completion of 9th to 10th standard and 6th to 8th standard.

- ❖ Most of the respondents are 'Married and Blessed with kids' and 'Recently married' and most of them live in a family of 3 to 5 and 6 to 8 members.

- ❖ In most of the families, there are one or two earning members.

Suggestions:

Personality Development among Women SHG

Most of the women empowerment is related to their personality development which is ensured by decision making, social, managerial, political, legal and psychological empowerment. Hence it is suggested that the authorities concerned may arrange personality development programmes to the less and new members of SHGs.

Confidence Building Exercise

Since one of the important factors leading to the women empowerment among the SHG members is self-confidence which can be created and sustained by confidence-building exercise, such exercises may be provided to the SHG members by the successful women entrepreneurs and experienced members.

Conclusion:

When women lead the family, the village progresses and the nation moves forward. This is necessary because their ideas and their value system develop a good family, a good society and ultimately a good nation. The best way to empower women is to include them in the mainstream of development. Women empowerment will be real and effective only when they have income and wealth so that they can stand on their own feet and build their identity in the society. Women's empowerment has become one of the most important concerns of the 21st century, not only nationally but also internationally Government initiatives alone are not enough to achieve those goals. There should be no gender discrimination and society should take initiative to create such an environment and women should have full opportunity to self-determination to participate i the social political and economic life of the country with a sense of equality.

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PRECOVID AND POST-COVID HEALTH INSURANCE TRENDS IN INDIA -A REVIEW

Dr.K.G. NALINA, Assistant Professor & Head, Department of Corporate Secretaryship, Sourashtra College, Madurai, Tamilnadu

Abstract

In India, the Covid 19 has changed every human being. Covid has changed individuals and made them scared about their health. COVID has changed people their working, spending, leisure hours, and daily routines. It has allowed people to buy health life insurance policies after COVID-19. It made us more conscious about our health and wellbeing. Many health insurance companies, were surveyed to determine whether there have been any mindset changes among people after the outbreak of COVID-19. The reports show increased awareness about unknown diseases, and more millennials and women coming forward to enquire about buying health insurance policies. This article finds out how perceptions about health insurance have changed in the post-COVID times and how changed or like these perceptions are across age, gender, etc.,

Introduction

Nowadays Life insurance industries are facing severe and violent competition while working in a market categorized by worldwide competition. India's insurance market ranked 11th in global business. The insurance industry in India has seen a remarkable growth rate over the last decades driven by greater private sector participation and an improvement in distribution capabilities along with substantial improvements in operational efficiencies. Standalone Health Insurers are expected to grow higher due to the increased focus on healthcare due to the pandemic. The market share of state-owned life insurance corporations in India experienced a decline and now it has been raised after covid. ICICI Prudential, SBI Life Insurance, and HDFC Standard Life are the largest private sector players catering to about 31.75 % of the market share as of September 2022(Indian Express). The overall demand for a wide range plan among women has increased from 45% to 63% in the last few months. The objective is to find out the post-COVID trend in the health insurance sector among human beings in India.

Is There any Need for Comprehensive Health Coverage?

Post-COVID, the percentage of health insurers increased to 41% and they are coming forward to enquire about the details of health insurance and comprehensive plans like treatment costs, coverage of diseases etc., pre-COVID, the percentage of buyers for comprehensive health plans was less. But in the last few months, the demand for health plans increased from 55% and 60% respectively. COVID-19 made everyone buy health insurance and comprehensive plans to safeguard themselves and family. The number of policy takers increased and it shows a clear sign of rising awareness about the comprehensive plans among them.

Who has More of Awareness Men or Women?

Before the COVID-19 times, the demand for a wide range of health insurance plans was greater among women than men. A survey shows that, pre covid 33% of men opted for comprehensive insurance, and the demand for the same was 45% among the women. Now the awareness about wide range insurance among men shows a 20% increase with overall 53% showing curiosity in the post-COVID times. But in contrast to women, the number of male policy buyers is still low. The overall demand for a comprehensive plan among women has increased from 45% to 63% in the last few months.

Do the People have Concern about Health Insurance Policies?

During pre-COVID people did not have awareness or seriousness about personal health expenses or their well-being but post-COVID times taught a lesson to people to buy insurance policies

in particular health insurance policies. More than 70% of the people thought that how I arrange money if someone falls ill in their family made people compulsorily go for comprehensive health insurance plans post-COVID times. But then again, this thought process has changed people significantly after covid. Nowadays, 54% of people are anxious about keeping their family safe from all new and existing diseases. Today the overall life expectancy has improved due to advancements in medical science and technology. Today the number of diseases affecting people is also increasing day by day.

Which Policy to Choose among Comprehensive Health Insurance Plans and Coverage?

Post Covid have changed people are aware and choose which health insurance policy will reward most and they are gaining more information regarding the health insurance policies and coverage. This shows a positive sign for buying health insurance which makes them mind-free and makes them precautionary. Pre-COVID times, 41% of people and 46% of insurance owners preferred health insurance policies by arranging calls that would make them more aware of health and wellness expenses. More than 49% of the total population has lifted their policy preferences and 57% of the health insurance policyholders show their liking for rewarding policies. People asked and enquired about the type of diseases covered in health insurance like covid 19 and other diseases like diabetes, heart ailment, cancer, and other diseases. Before COVID, the ratio of people looking for a policy that pays for unfamiliar diseases was 50% for the total population, 49% for health insurance policyholders, 52% amongst the intenders, and 46% and 57% among men and women respectively. But in real, the health insurers ask today whether the policy covers COVID and other unknown diseases.

Life-Threatening Illness was the Top Reason for Buying Health Insurance Pre Covid 19

During pre-COVID people purchased health insurance only for life-threatening illnesses, all ailments, and not for unknown diseases like COVID-19. But in India, 23% of them purchased only because of heart disease. Presently, most health insurance policies are purchased only for diseases like COVID-19 and unknown diseases.

Conclusion

Before Covid times, many people decided to purchase a health insurance plan depending on how much coverage the plan would provide. A study says that 55% of health insurance purchasers want a plan that provides a cashless facility, 39 % ask for how much illness is covered, 33% ask for a family floater, 30 % ask for a premium amount to be paid every year and 21% ask for the duration of health insurance coverage. Nowadays, the health insurance purchasers are aware of the health insurance policy benefits. It is very important for every insurer whether it covers an unknown disease like COVID-19 and other new diseases in addition to all disease coverage.

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THE BEST SOCIAL MEDIA TOOL TO SELL PRODUCTS THROUGH ONLINE - A REVIEW

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Abstract
In 2024, Social media marketing strategies will incorporate sustainability initiatives and purpose driven content to resonate with social conscious audiences. Brand should showcase their commitment to ethical practices and engage in conversations surroundings important social causes. Every seller must build the social media platform to reach the right people with the right tools. We must need to connect the followers and find new ones. Organic social posting will be scheduled to publish about the products and services by posts across Facebook, Instagram, telegram and other social media tools to attract the target audience. Face book Ads find new fans, connect with existing ones or retarget the seller's website visitors. Instagram Ads promote the seller's brand in a visual way to find the fans and retarget site visitors. Every beginner must keep the conversation going across all the social media tools. The more fans on social media, the easier it is for the people to get know the seller. This paper tells how every small seller can sell the products through Instagram.

Introduction
Social media has emerged to be a revolutionary tool to sell the products through online. From connecting long friends to linking professional, social media offers one of the best prospects for socializing with the world from the comfort of one's couch. Today, it has become a important channel for promoting brands, e commerce platforms and independent sellers to connect their target audience and conduct sales online. Over the billions of active users on Facebook, twitteratis, instagrammers provide lucrative business opportunities to the independent sellers today. These independent sellers are adapting this dynamic way of marketing and sales to reexamine their strategies to draw higher revenues. This paper attempts to tell how to sell products through Instagram.

How to sell the product online?
There are different ways to sell the products or services through any of the social media platform like Instagram, Facebook, telegram or any app etc. The following ways are used by the seller before sale
1. Pick the right platform
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3. Stream live videos with products and upload a video with filters to attract the customers online. These live videos will make the customers by diverting them to buy the products.
4. Interact with followers by liking, commenting, and mentioning, tagging and direct messaging to the customers by accessing messenger icon and notepad button.
5. Use relevant hashtags with selfie or photos to help users find content on Instagram which include letters and numbers.
6. Use Instagram Reels to learn more about connecting to your target customers.
7. Advertise on Instagram with Photo ads, Video ads, and Carousel ads continuously.
8. Obtain audience insights.
9. Sell products on Instagram by asking the customer with their name, email address, billing info and shipping address. Customers can pay via Visa, MasterCard, American Express, Discover and PayPal.

Conclusion

In India, with two billion monthly active users, Instagram is one of the best platforms for social selling. The average user spends 29 minutes a day on the social network, and 400 million Stories are added each day in Instagram. Moreover, Instagram's visual-first platform is ideal for product discovery and branded content. Instagram helps the sellers with Increased Visibility & Brand Awareness. As one of the world's most popular social media platforms, Instagram provides businesses with an excellent opportunity to increase their visibility among potential customers. It is the Cost-Effective platform with improved engagement to sell the product through online. When compare to other social platforms higher conversion rates are possible in Instagram.
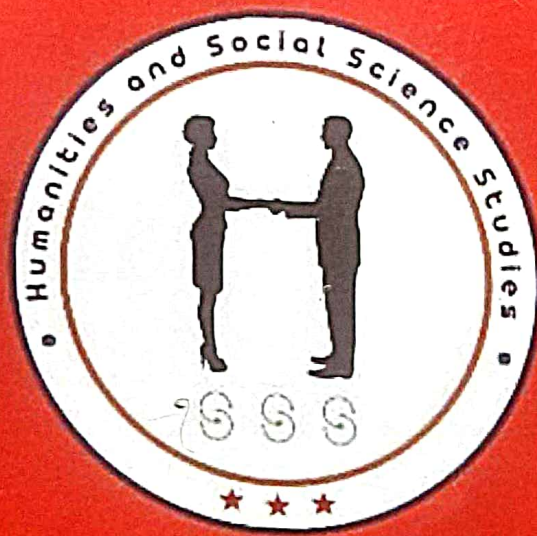
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MOTOR INSURANCE CUSTOMER SATISFACTION OF PUBLIC SECTOR GENERAL INSURANCE COMPANIES IN TAMILNADU

Dr.G.CHINNA DURAI, Assistant Professor of Corporate Secretaryship, Sourashtra College, Madurai, Tamilnadu.

Dr.V.SURESHBABU, Assistant Professor of Commerce, Mannar Thirumalai Naicker College, Madurai, Tamilnadu.

Abstract

The insurance industry in India has been an array of changes in the past one decade. The economic scenario which emerged after globalization, privatization and liberalization has thrown a new challenge before the insurance sector. Now it has to be more competitive in order to meet the needs and demands of its customers. The reforms contributed to increase the awareness of the insuring public about the wider range of choice of insurance product and the price offered by the competing insurers in the market. It is the tuff challenge for public sector insurance companies. Hence the researchers to under the present research study.

Key words: Customer, public sector, motor insurance and satisfaction.

Introduction

Customer is an asset of an every organization. In successful business enterprises have to satisfy the needs and wants of the customer. The importance of customer satisfaction has a positive effect on organization profitability. There is an important connection between customer satisfaction, loyalty and retention. Therefore they are all very important for an organization to be successful. Customer's affect renewals and consequent loss of treat, image of the company, and finally the profitability that is bottom line of the company. One dissatisfy customer tells their perception, experience, grievance to another friends and relatives. So we need to save this adverse publicity through word of mouth and avoid incurring manifold increase in expenses, which is an additional cost incurred by the business by loosing so many customer and then trying to replace them with new policy holders. Therefore, all the efforts must be put in to retain a customer.

Objectives

The following are the objectives of the study.
- To analyses the customer satisfaction level of public sector general insurance companies in Tamilnadu.
- To offer the valuable findings.

Statement of the problem

General Insurance Corporation has been challenged in recent years by a variety of forces from internet disintermediation to aggressive marketing by new entrants, financial services deregulation, compliance pressure, competition from other investment vehicles and of course customer empowerment. The changing insurance industry dynamics present many opportunities for insurers, but capturing these opportunities requires a well-defined and proactive business response. The GIC must re-evaluate how they handle indemnity holder interactions; align their offering with customer purchasing criteria, better understanding, and act on the drivers of indemnity holder gratification, loyalty and defection. Hence, the researcher to attempt the "Motor insurance customer satisfaction of public sector general insurance companies in Tamilnadu".

Methodology

Both primary and secondary data is used for the study. Primary data collected from motor insurance policy holders in Tamilnadu. Will designed interview schedule used for collecting primary data. Simple random sampling technique was adopted for collecting primary data and the researcher

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IMPACT OF SMARTPHONES ON STUDENTS LIFE

Dr. K. SUBBULAKSHMI, Assistant Professor of Corporate Secretaryship, Sourashtra College, Madurai, Tamilnadu

Abstract

Smartphones have become an integral part of students' lives due to their advanced features. They rely on their smartphones to accomplish various daily tasks, making it an essential tool for them. Entertainment, socializing, and education are the primary purposes for which students utilize smartphones. In particular, parents of female students find mobile phones convenient for staying in touch with their daughters. This study aims to explore the patterns of smartphone usage among students and examine the positive and negative effects it has on their education, psychology, and social lives. Notably, the COVID-19 pandemic has led to increased reliance on mobile phones for educational purposes among all students in schools and colleges.

Keywords: Smartphone, Covid-19, Education, Mobile phone, Entertainment.

Introduction

Smartphones can be considered miniaturized computers due to their advanced features and performance. They provide similar functionality to a computer but in a compact and portable form. The rapid advancement of technology has resulted in the development of electronic devices such as smartphones, which offer functionalities beyond just messaging and calling. These devices enable e-learning, the downloading of educational materials, and attending online classes, especially during the COVID-19 pandemic. The progress in mobile communication technology has significantly enhanced connectivity and communication, affecting various aspects of society, including accessibility, security, safety, and social activities. However, the use of mobile phones in schools and colleges during online classes can pose challenges. This study aims to examine the impact of smartphone usage in this context.

Objectives

1. To determine the positive impact of smartphone usage on students' daily lives.
2. To identify the negative impact of smartphone usage on students' daily lives.
3. To investigate the purposes for which students use smartphones. .
4. To examine the advanced features of smartphones that attract students.

Positive Impact of Smartphone on students

Ease of access to technology: Mobile phones provide students with real-time information and updates on their academic topics, allowing them to stay updated on the go. The use of technology-driven tools in learning enhances students' interest and engagement. Modern teaching methods incorporate technology to capture students' attention effectively. Visual presentations of information and results are utilized to aid students' understanding. With the help of mobile phones, students can quickly and accurately translate foreign languages, making comprehension easier. Additionally, students can now download document scanner applications on their mobile phones, enabling them to conveniently scan and digitize documents.

Convenience: During the COVID-19 pandemic, the education system heavily relied on mobile phones for schools and colleges. Online classes were conducted primarily through smartphones, leading to a shift in teaching methodologies towards e-teaching. Nowadays, numerous companies offer a wide range of mobile phones specifically designed to cater to various aspects of our daily lives. These devices incorporate the latest technology and prove to be useful in multiple social activities.

High security and emergency communication: One positive effect of mobile phones on students is that they can utilize smartphones to inform their parents and security agencies about their whereabouts during unforeseen emergencies. This instant communication capability provides an added layer of safety and security, allowing students to quickly seek help and assistance when needed.

Portrayal of women characters in Sudha Murty's novels.

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Abstract

History of Literature has witnessed and noted the advancement of women's careers over the centuries. The Excursion of Women of yesterday has been extremely critical, contemptuous, and reprimands, which they have handled with dignity and perseverance. The novels by Sudha Murty depict the lives of urban technocrats who are influenced by materialism and ambition. Her female characters are likewise fiercely independent, tenacious, and highly clever. Unlike the stereotyped, helpless women, whom we always see in films or novels, they represent the real Indian women. When money and power over rules a person, the family shatters into fragments. In business families, women are the silent victims who consistently give up their own goals and ambitions in favour of their husbands' achievement. She has written many valuable novels like Dollar Bahu, Gently Falls Bakula, House of Cards and Mahashweta. In these novels, she dealt with the theme of feminism. She portrayed a woman fighting for her rights in a patriarchal social system. She also focused on the suffering of women in the patriarchal Indian society. She wrote with a clear vision of the middle-class woman. Her novels speak for women's rights and protest against oppression and suppression under the mask of patriarchy.

Key words: Feminism, Patriarchy, Globalisation, Loneliness, Identity, Family.

Women from India are increasingly creating their own genre of English-language writing. The use of English as the vehicle for a woman's response to the various situations where tradition and modernity collide influences the creative output of Indian women authors, especially novelists. Indian women writers are vivid observers of the distinctive socio-cultural, historical, and political struggles that Indian women experience. Raja Rao, R.K. Narayan, and Mulk Raj Anand made every effort to give the Indian script in English a new identity.

The novel is a dynamic literary form that is constantly changing. With the artist's skill, it achieves a shape, an idea, and an expression that are distinctly Indian while still having worldwide appeal. A detailed examination of women authors of Indo-English fiction can reveal some fascinating features. Most writers draw on personal experiences when writing their works, and almost all of them end up feminising their work in some way. Some of them share their autobiographies with us through fiction, and they all essentially empathise with their female characters. There are a few things that stand out to us when we examine contemporary Indo-English fiction written by women authors.

Feminism has gained popularity throughout the world as it advocates women's independence and calls for social justice and equality. Feminism has gone through three waves: the I, II, and III waves. At each of these stages, men have reacted in different ways, sometimes to the point of calling for male independence. Numerous patriarchal beliefs have been disproved since science emerged and challenged religious assumptions about human beginnings. Men and women's roles in society are also a part of this.

From childhood to womanhood, female writers examine the problems that women face in life. The novelists disseminated feminism through their works and offered readers the possibility that women's suffering would come to an end. The mind and imagination of creative writers are influenced by the environment they live in. In the past, women showed themselves as patient, selfless, loyal wives, mothers, or daughters. Male writers depicted them as glorified characters who stood for giving, love, devotion, compassion, and other ideals. However, such portrayals of women were not factual or realistic.

Many female writers modified their perspectives once the country attained independence. They make an effort to convey and illustrate the genuine sentiments, desires, and experiences of Indian women. Sudha Murty, the author, is from Shiggaon in North Karnataka and graduated from the Indian Institute of Science in Bangalore with an M.Tech in computer science. She is the current Chair of the Infosys Foundation and the first female engineer in the field of telecommunications. She has published many novels, nonfiction works, and children's books.

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received various awards for her contribution to society. She was awarded the Padma Shri Prize in 2006 and the R.K. Narayan Prize in 2006 by the Government of India for her contribution to the field of literature.

Her works are a genuine representation of the socio-psychological issues that modern Indian women are currently facing because she is one of the most prominent and successful contemporary modernist writers. She has simply analysed the key issues of the present in her works and presents the key contemporary topics in a straightforward manner. She has extensively explored the workings of the inner mind of the female characters in her works.

Sudha Murty's writings convey her ideas concisely and effectively. She is a prolific writer in both English and Kannada, and the villages and residents of Karnataka are the main subjects of her works. She supports feminism and equips her female characters with the fortitude to deal with life's challenges. She exhorts women to recognise their incredible power and use it to exercise judgement. She uses her fortune to assist people who are less fortunate and does so with humility and modesty. She understands the cries and sufferings of the underprivileged, indigent, and marginalised groups in society. The female characters are shown as intelligent strong-minded women who are ready to take on any challenge and triumph by making a place for themselves in society within the confines of Indian tradition.

Gently Falls the Bakula, Sudha Murty's debut novel, tells the tale of a marriage that goes astray as a result of ambition and self-interest. The protagonist, Shrimati, helped her husband to the heights of renown in his IT profession by being a diligent, devoted, true, and loving wife, which allowed him to reach the pinnacle of popularity in the novel's story of ideology, in spite of family disputes, and the stereotypical mother-in-law and sister-in-law.

Shrimati completely dedicated her life to her spouse, sacrificing her desire to pursue a career. She had hopes for a happy family life, but her husband Shrikant's reluctance to spend time with her or even acknowledge her dedication to him crushed those hopes. She made the difficult decision to leave her marriage because she was reluctant to put up with the intangibles. Her husband had failed to recognise her everlasting commitment.

 Shrimati tells Shrikant, '**Shri, I am getting a scholarship. I have thought over this matter for the last few weeks before taking this decision. I did not bring anything with me when I got married to you. Now also, I am not taking anything from this house. My flight is scheduled for tonight…now I can leave peacefully**.'(GFB, p.160)

Shrimati leaves without giving a thought to what other people may think, even though no one in this heavily male-dominated society would approve her action. She behaves as she sees fit. Murty represents a powerful woman discovering who she is.

Anupama, the main character in **Mahashweta** (2007), exhibits her passionate and unwavering love for her partner Dr. Anand, who does not respect her love just because she is diagnosed with leukoderma after marriage. Despite being a cosmetic condition, leucoderma has affected many people's lives and caused much agony for those who have it.

No artist can recreate the vibrant colours of nature on canvas. We think we know all about beauty, but what we fail to understand is that external beauty is short lived. (MS p.132).

Dr. Anand eventually locates her address and apologizes for his actions. Anupama, however, is not in a position to pardon him. She says 'You knew that I did not have this disease before our marriage. You could have told your mother…but you didn't. You were scared that I would be disfigured because of this disease…I ended up a victim because you chose to dishonor the vows you took.'(MS, p.147)

'We met accidently, but we were not made for each other. Let us part with a good grace.'(MS, p.149)

In the first part of the novel *Mahasweta*, Murty's protagonist is modest, obedient, accepting and bemoaning her lot while hoping for support from her spouse. But in the second part of the novel, she comes into her own as a self-assured, resourceful, competent, and respectable individual. Murty has portrayed strong women discovering their own identities.

In the novel, **House of Cards**, Mridula, the main character, falls in love with the young doctor Sanjay at a Hubli wedding. The marriage proposal made by Mridula and Sanjay is accepted by both parents. Sanjay secures employment in Bangalore's Victoria Government Hospital following his marriage. They move to Vijaynagar after Sanjay receives admission to the post-graduate programme in gynaecology after a few months (West area of Bangalore). Sanjay eventually completes his education and begins working as a physician and lecturer in a government hospital in Bangalore. Because of her stupidity and ignorance, her spouse has thoroughly exploited her.

All these acts have been fostered by Sanjay's crafty personality. She loses all of her confidence, is resentful, startled, and angered after learning about her husband's dubiousness. She doesn't think her husband Sanjay has betrayed her. She has been bred to be restless by living with him. Since the very first day of their marriage, she has lived with total faith and confidence in him.

Mridula tells her friend Anita, 'Anita, it is not about money. Money can be earned and lost. It's about faith that a wife has in her husband. That's more valuable than money and gold. Faith sustains a marriage and brings joy to the family. Without it we have nothing. How can Sanjay destroy the faith and trust I had on him?'(HOC, p.186)

Mridula claims that Sanjay is a dishonest, doubtful, and dubious individual who has stabbed his own wife in the back. To free herself from emotional burden, she leaves her husband. She believed that being alone and content is preferable to being with someone who makes you feel unworthy, unwanted, and inadequate.

Mridula emerges from the door wearing a white cotton sari and exuding calm. She says, "No, I have spent twenty five of my most important years with you, and yet, I never felt like I belonged to you or your family. I'm still an outsider…Now, I want to live for myself. I have my job, my school and my village. You don't have to worry about me any longer. You and Sishir can visit me whenever you want" (HOC, p.218). Mridula is brave, sincere, and honest. She is incredibly energetic and full of life's passion. She aims to make the most of each and every minute of the day.

The story of how money corrupts people's perceptions of one another and how it can all but destroy a family is told in ***Dollar Bahu***. Vinuta weds bank employee Girish and moves in with his family in Bangalore. She settles in nicely with her new family, taking good care of her husband, father-in-law, and mother-in-law Gouramma, and not taking her mother-in-law's incessant picking personally. However, Vinuta has to put up with repeated comparisons to Chandru's wife, the "Dollar Bahu," whose husband earns the priceless dollars that have recently given the family's riches. Chandru is Girish's older brother who lives in the US. Because her mother-in-law does not acknowledge Vinuta's heroic sacrifice and silent suffering, she gradually loses her peace of mind and physical health.

When she has a conversation with Chandru, she tells him, 'To be honest with you, I am not at all that happy either. All the time, there is comparison between Jamuna and me. I don't want and can't compete with anybody. But its evident that the family does not need me

anymore…finding him more a friend than a brother- in-law (DB, p.72) At last she decides to move away from that place.

Early feminist writer is valued for their efforts to liberate women from patriarchy and domestic squalor. Women who have received education and left the confines of the traditional home have chosen a variety of professions, including acting, modelling, and business, which were traditionally seen as inappropriate for women. Therefore, the later female writers reflect the situation of contemporary women who are prepared to overcome the limitations placed upon them in order to assert themselves sexually and economically on par with men.

The identity of a woman is assigned to her spouse in Indian culture. In other words, women have always been given a subservient and relative position, they are never considered autonomous:

"Man can think of himself without woman. She cannot think of herself without man". And she is very simply what man decrees … she appears essentially to the male as a sexual being. For him she is sex, absolute sex, no less. She is defined and differentiated with reference to man and not he with reference to her; she is the incidental, the inessential as opposed to the essential. (*The Second Sex* by Simone De Beauvoir, 76). She is treated as a decorative afterthought who must travel everywhere with her husband and mingle with those he likes. She must never expect to associate with people of the other sex or she will be labelled as immoral.

Thus, the Indian woman, whether quiet or aggressive, traditional or modern, is confused and emotionally vulnerable, and she also feels afraid and alone. Despite being influenced by the ideas of equality and emancipation, she struggles to adapt to life's realities since she must adhere to conventional norms. Dorothy Parker has written: 'I cannot be just to books which treat of woman as woman ... My idea is that all of us, men as well as women, should be regarded as human beings' (*Sociology*, p. 143). If a man gains the entire world but loses his own soul, what good is that? The difficulties in life can be greatly reduced if one can comprehend this and behave in full awareness.

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A Study on Consumers Perceived Risk in Online Shopping in Madurai City

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Abstract

Utilizing the internet as a marketing platform has become increasingly popular among companies, presenting an unconventional avenue for reaching consumers. Perceived risk serves as a crucial indicator in comprehending consumer behavior, as individuals are often more driven to evade potential losses than to maximize successful purchases. This underscores the significance of understanding consumers' perceived risk, particularly for managerial decision-making. Online shopping, characterized by its convenience and the expansive product offerings at one's fingertips, has become a prevalent method of commerce. Mobile commerce (m-commerce) extends this convenience, referring to purchases made through an online retailer's mobile-optimized site or app. Additionally, when businesses engage in online transactions with other businesses, it falls under the category of business-to-business (B2B) online shopping. This study, conducted in Madurai City, involves the collection of 50 samples to examine consumers' perceived risk in online shopping. The primary objectives include identifying various categories of perceived risks, analyzing the diverse risks associated with online shopping, and understanding consumers' risk perceptions in this context. The analysis of perceived risk contributes to enhancing marketing efficiency, underscoring the pivotal importance of studying consumers' perceived risk in the realm of online shopping.

Keywords: Online Shopping, Perceived Risk, Marketing Efficiency, Purchasing Decision, Financial Risk

Introduction

In an era marked by heightened global interconnectedness, marketers are presented with unprecedented opportunities. The rapid integration of the world economies has prompted businesses to embrace the internet as a cost-effective avenue for conducting marketing activities. Amid this digital transformation, online shopping has emerged as a dynamic and expanding facet of technology. Establishing an online store empowers retailers to broaden their market, connecting with consumers who might not frequent physical stores. This paradigm shift, referred to as business-to-consumer (B2C) online shopping, involves consumers directly purchasing goods and services from sellers over the internet using web browsers.

Statement of the Problem

In our modern world, the relentless pace of life has led people to turn to online shopping for its convenience. India, positioned as the third-largest internet user globally, boasts over 121 million internet users, with a significant portion opting for online purchases. As online shopping gains popularity, it becomes imperative to delve into consumers' perceived risks, especially in the context of Madurai City. Recognizing consumers' perceived risks in online shopping is crucial within the marketing landscape.

Objectives of the Study

• Identify various types of consumers' perceived risks in online shopping.
• Analyze the diverse risks associated with online shopping.
• Understand consumers' risk perception towards online shopping.
• Gain insights into consumers' behaviour in the realm of online shopping.

Significance of the Study

This study holds managerial significance by illuminating the importance of understanding consumers' risk perception and associated risks in the realm of internet shopping. For marketers, awareness of risk perception attributes is pivotal, as consumers' perceived risk levels play a decisive role in internet purchasing. This analysis enhances marketing efficiency, underscoring the crucial importance of studying consumers' perceived risks in online shopping.

Research Methodology

Research methodology serves as a systematic approach to solving research problems. In this study, the research design, data sources, and statistical tools are outlined.

Sample Design

The study utilizes a sample design, a defined plan for extracting a sample from a given population.

Sample Method

Convenience sampling is employed to draw a sample, with a total sample size of 50 participants.

Area of the Study

The study focuses on online shopping customers in Madurai City.

Sources of Data

Primary data, collected through a Likert scale questionnaire, provide firsthand information. Secondary data are derived from journals, magazines, academic books, and internet sources.

Statistical Tools Used

The study employs percentage analysis, ranking methods, and a five-point Likert scale for comprehensive analysis.

Limitations of the Study

• The study's exclusion of certain variables related to internet perceived risk.
• The small sample size and localized respondents may limit the study's representativeness.
• The study's time constraints restrict a more comprehensive examination.
• The time period for the study is limited to conduct a comprehensive study.

Data Analysis and Interpretation

Table 1 Reasons for Online Shopping

Reason	No. of respondents	Percentage
Door step delivery	5	10
Low price	7	14
Time saving	14	28
Wide variety of brand choice	2	4
Getting latest product	12	24
Convenience	10	20
Total	50	100

Source: Primary Data

Interpretation

The table indicates that the primary motivator for online shopping is time-saving, with 28% of customers preferring it for this reason. Following closely, 24% opt for online shopping to access the latest products, while 14% cite low prices as a driving factor.

Ranking Method

Table 2 Ranking on the Basis of the Grand Mean Score of Different Perceived Risk

No	Risk	Mean	Rank
1	Financial Risk	12.06	1
2	Product Risk	11.38	3
3	Time/Convenience Risk	12.04	2
4	Delivery Risk	11.22	4

Source: Primary Data

Interpretation

Financial risk emerges as the most significant concern for online shoppers, with a grand mean score of 12.06, ranking first. Time/convenience risk follows closely as the second most important, while product risk is the third. Delivery risk is perceived as the least significant problem.

Online Shopping Experience

Table 3 Ranking on the Basis of the Grand Mean Score of Different Perceived Risk

No. of respondents		Percentage	Cumulative
Highly satisfied	21	42	42
Satisfied	11	22	64
Average	8	16	80
Dissatisfied	5	10	90
Highly dissatisfied	5	10	100
Total	50	100	

Source: Primary Data

Interpretation

The table illustrates that 42% of users are highly satisfied with their online shopping experience. However, 10% express dissatisfaction, indicating room for improvement.

Table 4 Showing the Overall Delivery Risk

Valid	Receiving Wrong Products	Good Arriving Damaged	Non Delivery	Send to the Wrong Place	Total	%
Strongly Agree	2	1	5	1	9	4.5
Agree	7	8	8	5	28	14
Neutral	20	5	21	19	65	32.5
Disagree	10	23	10	14	57	28.5
Strongly Disagree	11	13	6	11	41	20.5
Total	50	50	50	50	200	100

Source: Primary Data

Interpretation

32.5% of respondents are neutral about delivery risks, while 28.5% disagree. This suggests that, overall, delivery risk is relatively low in the context of online shopping.

Findings of the Study
- The primary motivators for online shopping are time-saving and access to the latest products.
- Financial risk is identified as the most significant concern, followed by time/convenience risk, while delivery risk is perceived as the least critical.
- 42% of users express high satisfaction with their online shopping experience.
- Overall, delivery risk appears to be low, with the majority of respondents expressing neutral or disagreeing views.

Suggestions
- Ensure the supply of quality products online.
- Provide after-sale services, such as guarantees and warranties.
- Timely delivery is crucial for customer satisfaction.
- Provide accurate and continuous product information.
- Enhance security measures for credit card information.
- Focus on delivering good services to build a positive online shopping experience.
- Consider implementing a money-back guarantee for faulty products.

Conclusion

This study emphasizes the perceived risks in online shopping, highlighting the importance of addressing financial and time/convenience risks. It concludes that young consumers are more susceptible to online marketing, and products catering to standardized and trendy preferences are in high demand. The identified dimensions of consumers' perceived risk-financial, product, time/convenience, and delivery-underscore the complex landscape of online shopping. While financial risk emerges as a primary concern, the study emphasizes the need for targeted strategies to mitigate these risks and enhance the overall online shopping experience.

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Shrimati leaves without giving a thought to what other people may think, even though no one in this heavily male-dominated society would approve her action. She behaves as she sees fit. Murty represents a powerful woman discovering who she is.

Anupama, the main character in **Mahashweta** (2007), exhibits her passionate and unwavering love for her partner Dr. Anand, who does not respect her love just because she is diagnosed with leukoderma after marriage. Despite being a cosmetic condition, leucoderma has affected many people's lives and caused much agony for those who have it.

No artist can recreate the vibrant colours of nature on canvas. We think we know all about beauty, but what we fail to understand is that external beauty is short lived. (MS p.132).

Dr. Anand eventually locates her address and apologizes for his actions. Anupama, however, is not in a position to pardon him. She says 'You knew that I did not have this disease before our marriage. You could have told your mother…but you didn't. You were scared that I would be disfigured because of this disease…I ended up a victim because you chose to dishonor the vows you took.'(MS, p.147)

'We met accidently, but we were not made for each other. Let us part with a good grace.'(MS, p.149)

In the first part of the novel *Mahasweta*, Murty's protagonist is modest, obedient, accepting and bemoaning her lot while hoping for support from her spouse. But in the second part of the novel, she comes into her own as a self-assured, resourceful, competent, and respectable individual. Murty has portrayed strong women discovering their own identities.

In the novel, **House of Cards**, Mridula, the main character, falls in love with the young doctor Sanjay at a Hubli wedding. The marriage proposal made by Mridula and Sanjay is accepted by both parents. Sanjay secures employment in Bangalore's Victoria Government Hospital following his marriage. They move to Vijaynagar after Sanjay receives admission to the post-graduate programme in gynaecology after a few months (West area of Bangalore). Sanjay eventually completes his education and begins working as a physician and lecturer in a government hospital in Bangalore. Because of her stupidity and ignorance, her spouse has thoroughly exploited her.

All these acts have been fostered by Sanjay's crafty personality. She loses all of her confidence, is resentful, startled, and angered after learning about her husband's dubiousness. She doesn't think her husband Sanjay has betrayed her. She has been bred to be restless by living with him. Since the very first day of their marriage, she has lived with total faith and confidence in him.

Mridula tells her friend Anita, 'Anita, it is not about money. Money can be earned and lost. It's about faith that a wife has in her husband. That's more valuable than money and gold. Faith sustains a marriage and brings joy to the family. Without it we have nothing. How can Sanjay destroy the faith and trust I had on him?'(HOC, p.186)

Mridula claims that Sanjay is a dishonest, doubtful, and dubious individual who has stabbed his own wife in the back. To free herself from emotional burden, she leaves her husband. She believed that being alone and content is preferable to being with someone who makes you feel unworthy, unwanted, and inadequate.

Mridula emerges from the door wearing a white cotton sari and exuding calm. She says, "No, I have spent twenty five of my most important years with you, and yet, I never felt like I belonged to you or your family. I'm still an outsider…Now, I want to live for myself. I have my job, my school and my village. You don't have to worry about me any longer. You and Sishir can visit me whenever you want" (HOC, p.218). Mridula is brave, sincere, and honest. She is incredibly energetic and full of life's passion. She aims to make the most of each and every minute of the day.

The story of how money corrupts people's perceptions of one another and how it can all but destroy a family is told in ***Dollar Bahu***. Vinuta weds bank employee Girish and moves in with his family in Bangalore. She settles in nicely with her new family, taking good care of her husband, father-in-law, and mother-in-law Gouramma, and not taking her mother-in-law's incessant picking personally. However, Vinuta has to put up with repeated comparisons to Chandru's wife, the "Dollar Bahu," whose husband earns the priceless dollars that have recently given the family's riches. Chandru is Girish's older brother who lives in the US. Because her mother-in-law does not acknowledge Vinuta's heroic sacrifice and silent suffering, she gradually loses her peace of mind and physical health.

When she has a conversation with Chandru, she tells him, 'To be honest with you, I am not at all that happy either. All the time, there is comparison between Jamuna and me. I don't want and can't compete with anybody. But its evident that the family does not need me

anymore…finding him more a friend than a brother- in-law (DB, p.72) At last she decides to move away from that place.

Early feminist writer is valued for their efforts to liberate women from patriarchy and domestic squalor. Women who have received education and left the confines of the traditional home have chosen a variety of professions, including acting, modelling, and business, which were traditionally seen as inappropriate for women. Therefore, the later female writers reflect the situation of contemporary women who are prepared to overcome the limitations placed upon them in order to assert themselves sexually and economically on par with men.

The identity of a woman is assigned to her spouse in Indian culture. In other words, women have always been given a subservient and relative position, they are never considered autonomous:

"Man can think of himself without woman. She cannot think of herself without man". And she is very simply what man decrees … she appears essentially to the male as a sexual being. For him she is sex, absolute sex, no less. She is defined and differentiated with reference to man and not he with reference to her; she is the incidental, the inessential as opposed to the essential. (*The Second Sex* by Simone De Beauvoir, 76). She is treated as a decorative afterthought who must travel everywhere with her husband and mingle with those he likes. She must never expect to associate with people of the other sex or she will be labelled as immoral.

Thus, the Indian woman, whether quiet or aggressive, traditional or modern, is confused and emotionally vulnerable, and she also feels afraid and alone. Despite being influenced by the ideas of equality and emancipation, she struggles to adapt to life's realities since she must adhere to conventional norms. Dorothy Parker has written: 'I cannot be just to books which treat of woman as woman ... My idea is that all of us, men as well as women, should be regarded as human beings' (*Sociology*, p. 143). If a man gains the entire world but loses his own soul, what good is that? The difficulties in life can be greatly reduced if one can comprehend this and behave in full awareness.

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Feminism in Sudha Murty's novels

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Abstract: *Through her work, Sudha Murty re-enacts feminism by delving deeply into the emotional and psychological realities of her female characters, with whom she constantly engages. Her novels address topics such as women's patriarchal oppression in specifically, as well as concerns of women's oppression generally and guilt over masculinity and femininity. The majority of Sudha Murty's female protagonists go through a transitional phase that establishes them as individuals in their pursuit of identity; who encounter endless obstacles before completing their mission or succumbing to life's vagaries. In order to focus on how gender discrimination, marital problems, and female identity blur in these fictional female characters, Sudha Murty's many depictions of middle-class women and their domestic worries are analyzed. She protests against issues relating to women's positions within families and their rights to equality compared to men in various spheres of social life. Sudha Murty elevates the woman to a cult figure, battling traditional taboos, societal and joint family limitations, and various other constraints imposed by patriarchy.*

It is a critical analysis of the characters' aspirations for recognition of their worth and value as economically independent individuals in a society ruled by males. The formation of their social identity as a means of self-fulfillment is studied, as is their resistance to dominant relationships and battles for social acceptance. This paper aims to free women from the accountability demands made of them, frequently without their knowledge. In a patriarchal society, women are shown by Sudha Murty as having a unique identity. The purpose of this paper is to investigate how Sudha Murty's writings were influenced by feminism.

Key Words: *Equality, Female, Femininity, Women, Social life.*

1. INTRODUCTION:

The goal of the social movement known as feminism is to provide women in society equal rights and opportunities. Feminism is the practice of considering women as human beings with issues, aspirations, and needs. Regardless of gender, religion, sexual orientation, race, or other similarly predominating distinguishing characteristics, feminism holds that all people should be treated equally in legal, economic, and social contexts. A sociopolitical movement known as feminism encourages women to take an active role in fighting for their rights. It is a movement that fights patriarchal oppression of women. English literature in India was also affected by feminist beliefs. Women's writing was regarded as an effective platform for modernism and feminist views in the 20th century.

The majority of feminist novels explore the psychological struggles of resentful housewives and the oppressed lifestyles of lower-class women. They show how modern women have come to understand that they are independent and not helpless. They consider women to be on par with men. Female subjectivity is examined by Indian women writers, who apply themes ranging from childhood to womanhood. Through their works, they explain what feminism is in reality. Feminism, according to these female writers, entails ending all of the silent pain experienced by women.

The feminists in India were influenced by the 1960s women's movement. Sudha Murthy, one of the few feminists in India, is a social worker who also writes frequently in both Kannada and English. Murthy started out as a computer scientist and engineer. She is the chairperson of the Infosys Foundation. Her various novels have been published primarily by Penguin and have been translated into 15 languages, including Hindi and Marathi.

Sudha Murthy's novels reflect the characteristics of feminism. They do not directly challenge the patriarchal culture, but they do so indirectly through her diverse characters in her writings. Her heroines are from middle-class backgrounds. They are bright, obedient, and subservient.

2. Gentle Falls The Bakula:
In this novel the chief characters Shrimathi and Srikanth are from the same school in a little North Karnataka town in Hubli. They are exceptionally competitive. Continuously Shrimati wins the goodwill of her instructors. She gets appreciation from her companions and the teachers. Even Shrikant knows well that she could be a great competitor to him. But oddly, he falls in love with her and she too reciprocates. They get married. After her marriage, she limits herself to a little world. She fails to put her career in track.

She renounces her time, education and opportunity of taking choices to fulfill her husband's purpose. She kills her desires and becomes an uncomplaining shadow to her spouse. She engages herself in serving and holding up for her husband's return from his business. On the other side, her husband Shrikant creates his specialized aptitudes and quickly climbs the corporate ladder. As he builds up his own industry, he overlooks the commitment his wife has made for his growth.

Women's lives are closer to the blossom of the Bakula tree. The Bakula tree lives for 100 years. The fascination of the minor, pale greenish tree is its blossoms with a divine smell. Indeed, the flowers shed a gentle scent as they dry and turn brown. The flowers attach a carpet to the ground beneath it when that tree is in bloom. Women's lives are similar to those of Bakula blossoms. The intelligent and talented women give up their career to satisfy the expectations and aspirations of their family members. They stand like pillars to support the roof of the house. To see their husbands victorious, they lose their joy at work, family and in every sphere of their life. They burn themselves out like a candle, spreading light to her family.

3. House of Cards:
The novel 'House of cards' addresses familial relationships in which married women are involved and the vital equilibrium needed to keep the relationships healthy. The House of Cards merely touches upon the whimsical and hypocritical chauvinistic attitude of men. The protagonist of this novel Mridhula has a brittle marriage that is easily destroyed by her cheating, treacherous husband.

The couple's peace in their married life depends on the attitudes of the male partner. All people are not good at heart; some are liars and some are self-centered. Mridula gives her husband complete love in all situations and accompanies him on the difficult road to achievement. But her husband Sanjay is an obnoxious intruder who has caused emotional harm to her. Sanjay never expresses his actual feelings for Mridula. He is her boss, he has a big ego from success, and he has never built a strong rapport with her, and in the long run reveals his detestable infidelity. On the other side, Mridhula personally backs him to fulfill his life's greatest achievement.

The protagonist perceives her husband's profound disloyalty in monetary matters. Perhaps her husband maintains his trickery well and feels inclined to his sister's and mother's self-centeredness. Because of his questionable demeanor she feels that it is smarter to be blissfully distant from everyone else than to be with somebody who causes her to feel mediocre, unfortunate and inadequate.

Without illuminating the marital life of his his better half Sanjay gives cash to his mother, buys a vehicle for his nephew Anil and opens a joined account with his sister Lakshmi. Gaining all his accomplishments with the assistance of his wife, he cheats and overwhelms her through his questionable nature. Later Mridhula ponders over her deplorable condition that has not allowed her to put something aside for their future. Subsequently her husband regrets his neglect and runs after her with a ray of hope to bring her back.

Mridhula battles with reason and feeling. Women's struggles occur because of the discrimination over qualities, and the cultural and psychological climate in which they grow up. The instilled values, the various societies and different monetary status of their families make her endure all miseries at her significant other's hand. The more the cash individuals get, the more selfish they become and the outcome is a shameless and disastrous betrayal of their near ones.

Inhumanity, the thirst for control and power obliterate a conjugal relationship and the house constructed meagerly falls terrifyingly.

This paper suggests that women ought to acquire equivalent privileges and they ought not to be ruled, subjected or cheated by male controlled society or their spouses. They ought to enjoy the same rights as their husbands. Females should likewise enhance their awareness and should not get fooled by anybody. It is smarter to be straightforward with one's spouse about the monetary state at every turn. One should not break the trust of one's spouse; once the trust is broken, one cannot expect to live respectively any more. The house built of cards can collapse easily. Owed to the irregularity in conduct and clandestine mentality of Sanjay marriage, a social sacrosanct foundation for a happy conjugal life, is drained of its sacredness.

Most likely, Sudha Murty discusses the genuine encounters of her life and presents female characters to show their griefs, yearnings and sufferings in this fraudulent world, where there is gender discrimination in managing financial matters in families . The sad state of affairs is presented in contrast to the pomposity, apathy, and voracity of the male-centric world.

4. Mahashweta:

In this novel Sudha Murthy depicts awoman's struggles from disappointments to self-fulfilments. Anupama, the desolate protagonist in Mahashewta, is a sensitive, energetic, passionate and sensuous character. She attempts to work out some kind of harmony between the needs of the institution of marriage and her own scholarly desires. She is profoundly bedazed when she comes face to face with the absurd life brought before her. Anupama is cheerfully married to Dr. Anand but her fantasy marriage goes to pieces when she finds a few white patches on her foot and discovers that she has leukoderma. Deserted by her relentless in -laws and heartless husband she is compelled to get back to her father's home in the village. At the point when Dr. Anand goes to Britain for higher studies, she encounters prolonged loneliness and a distressing absence of communication.

The whole novel deals with two different mentalities of women – Anupama, Dolly, Sumitra are sensible, cherishing, loving and understanding; Anupama's step-mother, mother-in-law, Girija are conceited. Anupama's stay with Sumithra, her college roommate who lovingly invites her in spite of her friend's white patches, is a standing testimony of the strong bonds of love and friendship among women who have developed positive virtues in their lives. .

Sudha Murty demonstrates the shift in society's mentality. Anupama temporarily takes up a clerical work (however she is over qualified for this work) which gives her confidence. There she meets Dolly who becomes her best friend and she moves to remain with her. In the meantime, Dolly meets with an accident, and Anupama's blood donation to her hints that leukoderma is not a barrier to blood donation. This incident serves as a second eye-opener for the audience.

On Dolly's suggestion Anupama takes up the job of Lecturer in Sanskrit in a College. Furthermore, she's more anxious to nurture the histrionics of her pupils as well. Dolly, on the other hand, gets married and moves to Australia, leaving Anupama to take care of her house free of rent.

Anupama meets with an accident and Dr. Vasant treats her. In the mean time Anand understands that he is so fond of beauty that he is willing to marry her. One day in Britain when he comes across a noble husband who soulfully attends to his disabled wife, he is overwhelmed by responsibility. He sets up practice in his sprawling mansion when he returns to India, but he is shocked to learn that his mother knew about his sister Girija's affair but covered it up.

While the society evades Anupama for a patch, Girija is respected! Anand is greatly shaken by this incident. He embarks to track down Anupama. Meanwhile Shamana, Anupama's father has passed away; she sends money for the rituals. The same stepmother who once thought she was a bad omen now writes to her in a sweet way because she needs money. Here, we can see how people change and how money affects some people. After some genuine effort, Anand gets Anupama's contact address and meets her. She makes it clear that their relationship is over in her decision. Her decision itself shows that the long painful sufferings of being a woman, the bitter struggle for the equality of decision-making, come to an end.

The patriarchal society takes their commitment to their family as their obligation yet they ought to likewise understand that it is the obligation of the male to show an equivalent commitment and affection towards the wife and her family.

The domination of the man-centric culture has been there for ages. The character of Shrimati in 'Gently Falls the Bakula' , Mirudula in 'House of Cards' , Anupama in 'Mahashweta' and numerous different women are having similitudes. women are such. They are submissive, smart, gentle and known for patience. Once they lose their patience and react, even touching their shadow can strike terror in a man-centred society.

Sudha Murty clearly presents her feminist thoughts in all of her novels. She expresses her thoughts exquisitely in words that are clear and simple – unlike some traditional scholars who astonish the readers with their abstruse language. Her language is surprisingly liberated from trite articulations. She is effectively justifiable and the readers never get bewildered with the words employed in her novels. She revived English and made it a reasonable vehicle for easy comprehension.

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QUEST OF SOCIAL IDENTITY AND CULTURAL HYBRIDITY IN KHALED HOSSEINI'S "AND THE MOUNTAINS ECHOED"

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Postcolonial refugee narratives are a subset of literature that explores the experiences of individuals and communities who have been displaced from their homelands due to the legacies of colonialism and the subsequent political, social and economic upheavals in postcolonial societies. Postcolonial refugee narratives center on the theme of displacement and dislocation, where characters are forced to leave their homes and communities due to various factors such as conflict, oppression, or economic hardship. This displacement is often a direct result of colonial policies or their aftermath. These narratives frequently examine the enduring effects of colonialism on postcolonial societies. They explore how colonial powers drew arbitrary borders, exploited resources and fostered divisions among indigenous populations, which can lead to ongoing conflicts and instability. Postcolonial refugee narratives delve into questions of identity and belonging. Characters often grapple with a sense of rootlessness and the loss of cultural, national, or social identities as they adapt to new environments or live in refugee camps. These narratives frequently depict the trauma and hardships experienced by refugees, including violence, loss of loved ones, and the struggle for basic necessities. They also emphasize the resilience and survival strategies of refugees in the face of adversity. Postcolonial refugee narratives often showcase the blending of cultures and the creation of new identities in exile. Characters may negotiate multiple cultural influences as they adapt to their new surroundings, leading to the development of hybrid identities.

Khaled Hosseini is an Afghan-American author known for his powerful and emotionally resonant novels, which often explore themes of family, friendship, redemption, and the human cost of war. He was born on March 4, 1965, in Kabul, Afghanistan. And the Mountains Echoed (2013): this novel weaves together multiple interconnected narratives, spanning different generations and continents. It explores themes of family, sacrifice, and the far-reaching consequences of choices made by individuals and their impact on the lives of others.

Khaled Hosseini's writing is celebrated for its vivid storytelling, rich character development, and its ability to shed light on the human experiences within the context of Afghanistan's complex history. His novels have garnered international acclaim and have been translated into numerous languages, making him a prominent figure in contemporary literature. Additionally, Hosseini is an advocate for humanitarian causes, particularly those related to refugees and the plight of Afghan refugees given his own background as an Afghan-American who fled Afghanistan in the 1970s due to the Soviet invasion and subsequent conflict. "And the Mountains Echoed" by Khaled Hosseini can be analyzed as a postcolonial narrative that explores themes related to displacement, migration, and the lasting effects of colonialism, although it may not fit the traditional definition of a "refugee narrative" in the same way that some other works do. Here are some aspects of the novel that align with postcolonial themes:

The novel depicts characters who are displaced or who migrate to different countries or regions for various reasons. For instance, characters like Nabi and Pari leave their native Afghanistan to live in France and the United States, respectively. This movement reflects the broader global migration patterns often associated with postcolonial contexts, where individuals and families are forced to leave their homelands due to political instability, economic hardship, or other factors rooted in colonial history. While the novel doesn't explicitly focus on the colonial period itself, it indirectly addresses the lasting impact of colonialism on Afghanistan. It hints at the social, cultural, and economic consequences of foreign interventions and power struggles, which have contributed to the displacement and migration of Afghan people. "And the Mountains Echoed" delves into questions of cultural identity and hybridity. Characters like Pari, who grow up in the West, experience a blending of their Afghan heritage with Western influences, reflecting the cultural hybridity that often occurs in

postcolonial diaspora communities. The novel explores themes of loss, separation, and disconnection, which can be seen as symbolic of the broader dislocations experienced by many postcolonial societies and their diaspora communities.

While "And the Mountains Echoed" is not a conventional refugee narrative with a primary focus on the experiences of refugees in the way that some other works might be, it does offer a nuanced exploration of the human consequences of migration and displacement within a broader postcolonial context. It highlights how historical events, including colonialism and foreign interventions, continue to shape the lives of individuals and families across generations, and how these experiences are woven into the fabric of their personal stories.

The process of identity transformation among individuals or groups occurs within the context of painful memories, enabling them to connect with their own experiences and empathize with the suffering of humanity as a whole. Immigrants play a pivotal role in shaping the collective mood in Afghanistan, as the act of moving from one's country of origin to another is often accompanied by profound pain. The issue of displacement in Afghanistan can be analyzed from two perspectives: internal displacement within the country and external displacement to foreign lands. In general, displacement resulting from conflict and war raises questions about identity, heritage and origins. Specifically, individuals or communities may undergo an identity crisis as a result of immigration, often grappling with the distortion of their culture.

The author's novels intricately interconnect different countries, weaving together diverse cultures, languages, traditions and living standards. However, above all else, they evoke a profound human sentiment that transcends all boundaries. Through his storytelling, the author not only expresses empathy for his own country but also demonstrates how different nations can collaborate with one another. The inclusion of other countries within the novel's plot illuminates the author's worldview and outlook on life, a significant theme in the 21st century. The central characters in these stories do not solely identify with a single nation but rather embody a transnational identity that aligns with the author's own experiences. Khaled Hosseini, representing his country, remains rooted in his origins while also being open to learning from the experiences of others. This cross-cultural process depicted in the novel reflects a global phenomenon and showcases the multiple identities of its characters.

The world today is grappling with various crises, including global conflicts, famines and the emergence of dangerous diseases. Alongside these challenges, the postmodern era has witnessed the rise of terrorism and its inhumane acts. Insecurity and terrorism have long plagued humanity and have been documented through literature. The people of Afghanistan, having experienced war and the destruction of families, cultures and communities, live with perpetual uncertainty and fear. In Afghanistan, victims are those who have witnessed traumatic events, endured harrowing situations and carry the weight of those memories. Fear and the experience of being victims of war profoundly impact the psyche of individuals and communities, leaving lasting trauma.

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AN ANALYSIS OF THE GROUNDNUT ECONOMY OF INDIA

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Abstract

The backbone of the Indian economy is agriculture. Although significant changes are taking place in this sector, a shift in the cropping pattern towards commercial crops from food crops is one of the remarkable changing patterns observed in Indian agriculture. Oilseeds are in a dominant position among commercial crops. Groundnut is one of India's largest oilseeds among oilseeds. Groundnuts are cultivated in more than 100 countries around the world. China, India, Nigeria, the USA and Sudan, the top five main producers, contributed 60 percent to the total world production. This study aims to study production, exports and imports, and the position of India at a global level. While production declined over the study period, India is one of the world's main producers. The Oilseed Technology Mission in India has been launched to improve the quality and quantity of lower-acreage groundnuts. In the world scenario for groundnut production India placed second and in the case of exports, it secured first position. With the level of acreage usage, China has the highest production level, while India has low production with the same level of acreage usage. The decennial growth rate showed that, over two decades, India saw a negative growth rate (1970-1980 and 1990-2000). Indonesia is the largest consumer of Indian groundnut products.

Key words: Groundnut, productivity index, exports, imports, Covid 19

Introduction

According to the World Economic Outlook (2023), India's economy is the fifth largest in the world in terms of GDP at current US$ prices with US$ 2.6 thousand GDP per capita. In the process of development of the Indian economy, the share of the agricultural sector in the National Income has declined consistently over time. In the early 1950s, half of India's Gross Domestic Product (GDP) came from the agricultural sector. In 2022-23, its contribution to the GDP was estimated as only 18.3 percent. However, the agricultural sector continues to support more than half a billion people employing 45.6 percent of the workforce. It is also an important source of raw materials and demand for several industrial products. In Indian agriculture, the monsoons play a critical role in deciding whether in any given year the harvest will be bountiful, average, or bad. In the early 1990s, one of the priorities of government policy was to find ways to reduce this dependency on monsoons. It is known that crop production expansion must come almost entirely from growing yields on land already in some kind of agricultural use. Because of the low rainfall and lack of irrigation facilities in India, agricultural production declined over time.

Statement of the Problem

Groundnut is considered to be the world's largest oilseed crop. The seeds present in the groundnut oil cake are a good source of edible oil and protein. The proportion of oil and protein derived from these is approximately 55% and 28%, respectively. The residual oil cake meal is used as animal fodder and fertilizer after the extraction of the oil. As a cooking agent, peanut oil is mainly needed, but it also has some industrial uses, such as paint, varnish, lubricating oil, soap, furniture polish, etc. Each part of the groundnut crop is used wherever it is appropriate. It provides the economy with an equally significant contribution. Even if India achieved self-sufficiency, its production and productivity could not be increased. Therefore, it is essential to research the groundnut economy of India.

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Emotional Bonds in Agha Shahid Ali's Postcard from Kashmir

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ABSTRACT

Diaspora literature, recognized as an independent academic discipline within universal literary canon, encompasses works produced by authors who have migrated from their home countries. Referred to interchangeably as 'expatriate' or 'migratory' writing, it has garnered increasing scholarly interest globally, particularly due to escalating socio-political and economic tensions worldwide.Indian Diaspora literature has evolved into a significant component of Indian English literature, reflecting the extensive reach of the Indian Diaspora, which spans the globe and ranks as the third largest after the British and Chinese Diasporas. Its influence extends across various fields, notably in creative writing, where authors of Indian origin have articulated their diasporic experiences. This literary realm boasts a plethora of distinguished male and female writers who have migrated abroad for various reasons.

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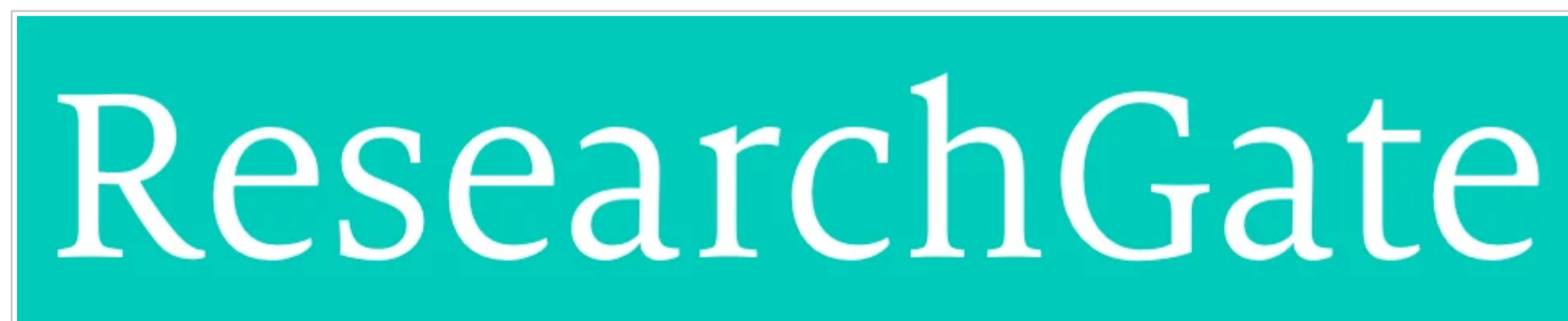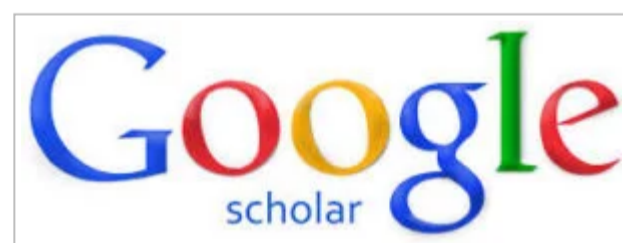
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CULTURAL DISPLACEMENT IN JHUMPA LAHIRI'S THE NAMESAKE

May 2023

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Abstract

The objective of this paper is to project light on the emigrants from India to foreign countries. Some of the emigrants have become diasporic writers who express their struggle with two cultures, two identities and their belongingness to nowhere in their writings which are termed as Diasporic literature. The paper also brings forth the plight of the migrators who are torn between multiculturalism and their flight for name. In short, the paper focuses on the constant conflicts and perplexions of name and identity that the emigrants face in the present world.

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CULTURAL DISPLACEMENT IN JHUMPA LAHIRI'S *THE NAMESAKE*

Dr.M.P.Ganesan, Assistant Professor, PG and Research Department of English, Sourashtra College, Madurai-625004, Tamil Nadu

Abstract:

The objective of this paper is to project light on the emigrants from India to foreign countries. Some of the emigrants have become diasporic writers who express their struggle with two cultures, two identities and their belongingness to nowhere in their writings which are termed as Diasporic literature. The paper also brings forth the plight of the migrators who are torn between multiculturalism and their flight for name. In short, the paper focuses on the constant conflicts and perplexions of name and identity that the emigrants face in the present world.

Keywords: Diaspora, identity, dilemma, post colonialism

When a researcher talks of Diaspora, researcher has to start with the analysis of emigration and settlement of people beyond the boundaries of their homeland. Restoration of the cultural identity in the host society is another significant criterion of the concept Diaspora. There are certain

literatures on various Diasporas such as the Chinese, African etc., Likewise study on overseas Indians is also being carried out today under the thesis of Diaspora Studies. Most of the literature on the Indian Diaspora concerns with Indian migration their socio economic and culture experiences, of conversion and acculturation in the present society. Overseas migration of Indians may be surveyed in terms of three phases (a) the ancient and the medieval (b) the colonial and (c) the post-colonial phases

The ancient and the medieval phase Indians have been relocating to various parts of the world from ages. The earliest exodus of Indians may be for the purpose of the trade and religious contacts with other civilization like the Greek and the Mesopotamian. The post colonial phase Indians have migrated to the foreign countries in order to do job and business that suits their qualification so that they will lead a luxurious life. Those Indians have the diasporic feelings and longing towards their homeland in their effort to get adapted and acculturated to the foreign country in which they are settled. These Indians have expressed and depicted their nostalgic feelings through their writings which are called as Indian Diasporic Literature.

Such writers of Indian Diaspora are V. S. Naipaul, Salman Rushdie, Amitav Ghosh, Anita Desai, Bharati Mukherjee, Rohintan Mistry, M. G. Vasanji, Bapsi Sidhwa, Kiran Desai, and Jhumpa Lahiri have explored the identity crisis, racial and cultural conflicts, ethnicity, sense of belongingness, loneliness and alienation among the immigrants. As Avtar Brah writes:

> What is home? On the one hand home is a mythic place of desire in the diasporic imagination. In this sense it is a place of return, even if it is possible to visit the geographical territory that is seen as the place of 'Origin'. On the other hand home is also a lived experience of locality. It's sounds and smells, its heat and dust, balmy summer evenings, sombre grey skies in the middle of the day, all this as mediated by the historically specific of every day social networks. (192)

In anthropology, displacement occurs when people are forced to leave their place of residence. These are referred to as displaced people. Over thirty years (1968-2000), Lahiri's novel *The Namesake* tells the story of an Indian Bengali family from Calcutta, the Ganguli, assimilation into America; the cultural displacement that the Ganguli family and their American-born children face in their effort to settle 'home' in the new land.

In this presentation a study is done on the novel *The Namesake* by Jhumpa Lahiri. *The Namesake* is the first novel which is praised by many critics. Her Master Piece is Interpreter of Maladies a famous story and it has received the 2000 Pulitzer Prize for fiction. The Namesake was published in 2003 which covers the story that spans over thirty years in the life of the Ganguly

family. The Calcutta born parents migrated to the US as young adults, where their children Gogol and Sonia experience the persistent generational and cultural gap with their parents. The novel studies the problems involved with being caught between to opposite and conflicting culture with their highly different religious, social and ideological differences. The novel portrays the clashes between first generation Bengali Immigration to the United States and their son, Gogol in particular. The story starts as Ashok and Ashima leave Calcutta, India and settle in Central Square, Massachusetts. Through a sequence of mistakes, their son's nick name, Gogol, becomes his certified name, an occurrence which will mould many aspects of his life.

Gogol is named so, by his parents in the memory of Russian writer 'Nikolai Gogol' whose book saved his father's life in train accident, when he was young. Giving two names for one person is a common thing in a Bengali family. So 'Gogol' is the 'dak nam' or pet name and 'Nikhil' is the 'bhalo nam' or the official name. Gogol grows up as an American who cannot understand his parents' Bengali traditions and tries to push them aside. Not only the Bengali traditions but also he finds himself as an odd man in the adopted life. Thus Lahiri portrays his search for his own self in two words. The novelist also captures guilt, longing, tragedy and hope in this excellently told story of family and of love. Jhumpa Lahiri once again exploits names as the looking glass self. She believes that each person experiences the self as a social object of which he becomes aware of until he attends a particular age and there is an assertion of an individual beginning to become autonomous.

One's own self is on the course of building a psychic identity. He organizes this identity because of the expectations of others and necessitates viewing himself or herself as an important and unique other. A man needs to reach a particular age to realize about his own self esteem and the identity. Burke and Stets provide the following example that helps to understand how one can have a

number of identities in different contexts:

> One can be a teacher, a wife, a mother, a friend, […] and so on. Each position has its own meanings and expectations that are internalized as what we would now call an identity […]. Each of these multiple selves we now recognize as different identities. Each 'self,' as we use the term, is therefore, made up of the multiple identities a person has. (24)

Gogol in *The Namesake* is happy and feels satisfied with his name since the process of selfhood as communication is about to grow. So far he is just a receiver of the signals that travels through his path way called Gogol. But he starts to identify that he has no place as an individual and the notion of self recognition is not developed. Hence he wants to change from 'Gogol identity' to 'Nikhil identity'. The teachers' description of Gogol in the class destroys his self- conceptions for he sees an indication of others in the same shade, as they have for Nikolai Gogol. Gogol who aims to be unique feels shy at the countenances of likeableness and so he seeks refuge in lavatory and underestimates himself.

In order to forecast a new identity, Gogol wants to change his name to redevelop a high self esteem. He goes to his parents who are unhappy but give their consent at the face of his unhappiness. In the event of changing his name, he informs the judge that his name is Erie and that identity gives only mental discomfort. The bench deigns and the process to crystallize a new identity is Gogol's fresh endeavor. Through his identity, he wants to feel the real me with help of his material self, he meets a series of sensation in his relation with Ruth, Maxine and Moushmi. Through his relation, he reaches only at what All port calls bodily me"with his identity as Nikhil, he lacks the physical presence for his parents and his relatives in India to whom his identity as Gogol is enduring and ineradicable thinking of his own self. She is torn between pride and embarrassment. Nikhil hints indirectly he who is entire, encompassing all now fails him for the self is not purely an experience but he has a consciousness of self work. As Jola Skulj notes in her "Comparative Literature and Cultural Identity," "[t]he problem of cultural identity involves the question of the self and of culture. In other words, this means reflecting on the essence of culture itself and the implication that there is

a reasonable motive of self-questioning" (2). The "self" reflects upon an autonomous subject or the subjectivity of every human being. As she elaborates further:

> Understanding of identity was a result of the romantic interpretation of the self as the inner reality of a given subject. It revealed in itself the concept of the subject as an absolute and autonomous being and denied any decisive or obligatory references outside itself. It denied transcendence outside oneself and identified itself only with its immanent reality or with its own immanent validity. (2)

In the process of shaping and reshaping, directing and redirecting, fashioning and refashioning himself as a social being Gogol fails to keep up his self hood through the process of self interaction. Now Gogol has realized the hindrances within the system of concept we use to define our own selves. Though Sonia and Moushmi are well coordinated with their 'dak nam' and 'bhalo nam' as Bengalis, Gogol fails in it and it demands a credible interpretation. Simply one can say that Gogol is far away from understanding the importance of Gogol as a writer and contributor to the aesthetics of literature.

All the experiences of Gogol that are mentioned may sound unreasonable in the novel for the readers, which are the real experiences of the author Jhumpa Lahiri herself. Jhumpa Lahiri's real name is Nilanjana Sudeshna which is pure Indian name is criticized much by her teachers in her school and hence she goes by her nick name Jhumpa. Jhumpa Lahiri has faced many problems recording her identity from her child hood. She wants to make her native as well as foreign readers to realize the dilemma faced by emigrants and their struggle to get adapted to the culture in which they are settled.

In the case of Gogol, the false character of Jhumpa, same crisis goes on. He wants to fit in his American world and at the same time he wants to fit to his parent's expectations. We cannot arrive at a point that he hates his parents rather he fails to understand the Indian world of his parents because of his brought up as an American. He lives "two Lives in the single life". He is tossed between the Indian and American Culture. So he is culturally dislocated and he lives in Tri Shanku world. As a typical hero he goes about his life with a purpose, going where facts lead him. He hesitates to take a few serious steps in his life but they are motivated more by his defiant mark against his brought up rather than a genuine desire to swim against the present. His unfortunate choices in marriage stems

form an instinctive desire to cling his Indian roots. The novel is about the constant dilemma faced by the emigrants, as they struggle to maintain their identity. They are also forced to make troublesome choices and they try hard to avoid being misfits in foreign land the immigrant's journey is found with departure and deprivation, though it is ultimately rewarding. But it secures for the subsequences the generations a sense of arrival and advantage. They have an intense desire to be loyal at once to the old world and still fluent in the new.

Thus Lahiri gives a range of details and uses these differences in cultures to keep the readers aware of the growing cracks between these two world and how Gogol moved from his origin and those Bengali ties hold him. Finally, Gogol learns that the answer is not to fully renounce or attempt to diminish to restrict either culture or world but to harmonize two worlds together. He cannot be fully in tune with his identity till he realizes that it is made only when both the cultures are adorned. He cannot choose to be one or the other since he is made up of both. So he should not weaken himself rather should strengthen his pride by mingling both the cultures/world. Though the novel wraps up with more down falls occurring in Gogol's life, he is able to stand on his feet. He is no longer ashamed of himself or the way he lived. He is proud of who he is and where he comes from. Most important, he is proud of his name and all that it means.

In Lahiri's novel *The Namesake*, the role of memory in a process of change is often used by the writer in an effective way. It is through the eyes of the first generation settlers that the second generation learns about the homeland. Cultural displacement involves the loss of language, family ties and a support system. Lahiri stresses culture and its importance in immigrant experience with a humanist outlook. Narrating the immigrant experience in America she consciously foregrounds the

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Urban And Rural Exploitation in Sircar's *Procession* and *Stale News*

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Abstract:

Drama is a performance of art with two main components: one for stage depiction and the other for literary innovation. A successful play necessitates a careful balance of artistic ingenuity and surface commercialism. It is easier said than done but the history of Bengal theatre, which spans two centuries, documents the continual striving for perfection. Badal Sircar's much-needed innovative theatricality has left an indelible impact on Indian theatre. His accomplishments as a playwright, actor, director and theatrical person have breathed new life into commercialized Bengali theatre. Sircar's vision of establishing a genuine home - a new society centred on equality and free of man's exploitation by man-is shown in three distinguishable stages of evolution in *Procession* and *Stale News*: The parade represents the ultimate home.

Keywords: Exploitation, Oppression, Injustice, Traditional Sense,

Drama is a performance art that has two fundamental aspects: one is intended for stage representation and the other is literary invention. The history of theatre, dating back to classical Sanskrit, Greek and Latin drama, attests to the dramatist's desire to please their audience. It is a horn of a challenge that a playwright inherits historically. On the one hand, the playwright must seek to elevate his dramatic art to unprecedented heights; while on the other hand, he must maintain a sharp eye on pleasing the patrons, pleasing one and all and the literary product's financial success.

Many aspects impact the process of creating a play, including the author's economic stability, political dominance, social order and cultural mores. A successful play demands a delicate balance of creative inventiveness and superficial commercialism. Though the precept is easier said than done, the history of Bengal theatre, which spans over two centuries, chronicles its ongoing quest to achieve excellence.

Badal Sircar has made an everlasting mark on Indian theatre with his much-needed inventive theatricality. His achievements as a playwright, actor, director and theatrical person have given commercialized Bengali theatre a fresh lease on life. Badal Sircar, who died in 2011 at the age of 80, has devoted more than half of his life to the passion of revolutionizing theatre for the sake of society. When we consider that he has left a solid working life for it, we can see his entire commitment and passion in the realm of theatre. He worked in Bengali theatre for almost fifty years without regard for fame, fortune or recognition.

Throughout that time, Sircar has continued to evolve as a playwright with tenacity and will. The evolutionary process has probably reached a climax in the shape of his experimental third theatre. Though 'third theatre' is his most significant work, there are other less explored thematic pathways in his vast theatrical repertory. The general tendency to evaluate Badal Sircar's work as the pioneer of 'third theatre' gives only a partial credit to his full significance. The image of his dramatic art cannot be constructed with the single evaluation of 'third theatre,' which has become the centre of his attention only in the latter half of his career.

Badal Sircar has written over fifty plays throughout his career. It is hard to evaluate all of them in a single thesis. This is not to say that a research field between two extremes cannot be discovered. As a result, the thesis takes a moderate approach to identify dominating ideologies through the examination of chosen sample plays. The plays chosen for this paper do not entirely reflect these views. They do, however, include them more prominently and authoritatively than other Badal Sircar plays.

The present paper intends to provide a comprehensive study of Badal Sircar, not by covering all of his plays but by examining major dialectical threads in his chosen plays and theatrical technique. Because of the dialectical method, the paper requires an appraisal of both technical characteristics of his theatre and thematic issues of his play texts. In this manner, it goes beyond the new mechanics of his theatre to the very core of beliefs that control the perfect dramatic artist's ideas and acts.

Badal Sircar has written numerous plays after developing the notion of the Third Theatre. *Procession* and *Stale News* are two of the most important middle-period dramas based on the notion of the Third Theatre and translated into English. A detailed examination of the plays *Procession* and *Stale News* reveals three discernible stages of growth in Sircar's vision of finding a true home and a new society founded on equality and free of man's exploitation by man.

Stale News depicts a man in revolt against social oppression that demonstrates a right way, and by removing the poisonous trees in the path of progress. A man can certainly be in a position to revolt against social and economic injustice, thereby creating a new society in which each works according to his ability and receives according to his need. *Procession* is called *Michhil.* It was initially presented in Bengali on 14 April 1974 in the hamlet of Ramchandrapur, West Bengal, by the Satabdi group and directed by the author. Samik Bandyopadhyay has translated it. The play lacks a storyline and characters in the traditional sense. It is a montage of many incidents from the flow of human life. The characters in the play are representative and symbolic rather than stereotypes. They are Khoka, an officer, an old guy, a master and a six-person chorus. The play's topic is 'being last' in civilization.

The drama begins with a load shedding scene in an Indian metropolis. A loud death cry is heard and several people light matchsticks to look for the victim. A commotion erupts. An cop arrives to conduct an investigation. He says: "Nobody was killed, Get back to your homes" (06). Every day, khoka is slaughtered and his screams are always silenced by cruel powers. As a result, the play begins by depicting the real-life situation of a poor guy in Indian culture.

Khoka screams again and collapses. The cop ignores it and it vanishes. A funeral song is sung by the Chorus. They carry Khoka's body. As a result, the play's opening procession is a funeral. All of the religious and revolutionary processions are performed out as the drama continues. In the play, there are several processions such as Micchils for food, Michhils for salvation, Michhils for the revolution, Michhils for flood relief, Michhils for military formation etc.,

The words 'Khoka' and home take on new meanings in this context. Khoka represents a youngster who has not been ruined by society. He still has humanity in him. He has not been dehumanized. He is the personification of mankind. The current civilization is the ancient home, where humanity is continually destroyed. The ancient dwelling is not favorable to humanity's existence. The new home is a futuristic civilization in which humanity is restored. It is devoid of civilization's dehumanization.

The chorus portrays the day-to-day lives of middle-class individuals in a metropolis. People are in route to work. Then, on a packed transport, people fight for a single foot space. They get preoccupied with their task. They pass the time by watching movies, sports or playing video games. It demonstrates how a man's life becomes a type of parade, a routine devoid of vitality or significance. Sircar has also depicted a scenario from the American Civil War. Indians' ambivalence with the British government is demonstrated. TWO says: "Remember, at the moment of your birth your life has been offered in sacrifice to the great mother" (18).

Sircar criticizes the system rather than any individual, class or government. He blames civilization for all human suffering. The old man's search for the true road to the true home represents mankind's desire for the correct path to reclaim their lost paradise. So the elderly guy claims that he has been walking for a long time and yet he always gets trapped here. Then, while inebriated, he sees Khoka, who informs him that he has been murdered. Meanwhile, Khoka dies again. Chorus leads his lifeless body in another funeral procession.

According to Sircar, the parade of men does not represent any class, party or philosophy. It is a human parade in which everyone, regardless of caste, religion, geography or nation takes part. Sircar breaks down the

regional barriers and attempts to convey the message of unity in variety. Veena Noble Dass points out: "… spectators and actors intermingle and the entire space of the room becomes a swirling mass of humanity. It is one of those moments in the theatre when one becomes acutely aware of the possibilities of life and the essential brotherhood of man" (24).

Throughout the play, Khoka is slain and the elderly man is repeatedly lost. In the drama, Khoka represents the truth. As a result, Khoka's death implies the annihilation of the truth. The play also depicts how the police are utilized to keep people from seeing the truth. Similarly, the play portrays how nationalism, religion, alcohol and entertainment are utilized to brainwash individuals.

Stale News is Badal Sircar's next significant drama from the middle phase. It was initially performed in Bengali by the Satabdi play group on July 6, 1979, at the Calcutta Theosophical Society Hall. The author himself has directed it and Samik Bandyopadhyay has translated it. *Stale news*, like Badal Sircar's *Procession*, lacks both people and a plot. Sircar and the rest of the Satabdi crew have worked together to create *Stale News*. They have gathered several news stories on exploitation and tyranny, as well as a collage depicting man. When the state of Bihar fell under British authority, their economic and social life began to disintegrate as a result of the British merchants' exploitation and tyranny, as well as the money-based economy that those merchants established. Damin-i-ko or santhals pargana was the area of Bhagatpur where the Santhals dominated the populace. Moneylenders, Bengalis, Punjabis and Bhojpuris converged to Damin-i-ko. They were known as Dikus. They gave Santhals modest quantities of money and purchased their wares at considerably below market value. The loan rates were excessive. To get loans, the Santhals were required to sign a permanent slavery bond. The British judges and magistrates collected bribes from landlords and money lenders in order to severely punish the destitute Santhals.

The Santhals rose up in opposition to all of these oppressions and exploitations. In their language, rebellion is referred to as Hool. The British troops slaughtered the elderly people, children and women without regard for their gender. The Indian government is every bit as wicked as the British government. We are still in the same condition as the Santhals. The play has alternatively made references to numerous stories and news articles during the recounting of the Santhals insurrection. TWO and THREE say:

… to a survey on bonded labour or men who have been forced to sign bounds enslaving themselves for life; there are 555,000 of these in Uttar Pradesh, 467000 in Madhya Pradesh, 325000 in Andhra Pradesh, 25,000 in Tamilnadu, 193000 in Karnataka, 171,000 in Gujrat, 111,000 in Bihar, 105,000 in Maharashtra and 67000 in Rajasthan. 66 Percent of the bonded labours belong to the low castes and 18 percent to the aborigines. 84 percent of the owners are high caste Hindu. Most of the bonded labourers have been driven to this pass by extreme poverty.

THREE: 70 percent of the population of West Bengal lives below the poverty line, and 95 percent below the basic nutrition line. The Minister for Education has estimated on expenditure of rupees 280 millions for. the proposed Asiad to be held in Delhi, 1982. (118-19)

According to the conversations above, the government of India has done nothing to better the lives of the poor. Despite being elected by the public, the government invariably favours the wealthy. It seldom safeguards the rights of the oppressed. The drama therefore intends to reveal the Bengali middle class's collaborationist role under the British Raj. The current drama is strongly connected with the aches and anguish of the average man in liberated India. It is the most important that Sircar is confused by a barrage of information that is frequently contradictory, full of contrasts and perhaps even the most shattering bits of information comes as Stale News. It might be the reason of Sircar to name the play as *Stale News*. According to B.Charanya,

Stale News is an apt example of Sircar's hobby of collage making. In the collage form various issues can be presented before the audience in the flame of a single play. Badal Sircar play group of Sircar have helped profoundly through their suggestions. (89)

Thus towards the end of the paper, one discovers the exploitation, oppression and injustice that existed in colonial and post-colonial India. Sircar can't keep his mouth shut any longer. Sircar encourages people to use

labels to protest injustice. In this fashion, Badal Sircar conveys the agonies and sorrows of a typical Bengali, eventually a common Indian man, in all of his middle-period dramas.

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A CRITICAL EXAMINATION OF KALIDASA'S WORKS AND THEIR IMPACT ON FOLLOWING WRITERS AND LITERARY THEMES

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ABSTRACT:
The aim of this paper is to evaluate the key concepts presented in Kalidasa's well-known works. This essay looks at Meghaduta and Abhijnana Shakuntalam, two literary works. Abhijnana Shakuntalam is brimming with creative ideas. It is a masterwork of poetic language and dramatic technique that conveys passionate and loving feelings in a delicate and temperate way. The play Shakuntala's central theme is the challenge of discovering true love. Kalidasa has changed it by highlighting the serenity of nature, Shakuntala's virginal beauty, and Dushyanta's macho power. Meghaduta delves into the intense bond that endures between a husband and wife even after their separation. Their traditional love affairs, which are uncontrollable in any situation, are portrayed in the poem. In Meghaduta, Kalidasa paints scenes of mountains, towns, rivers, and landscapes that the cloud must pass through to get to Alaka. The lyric's vivid imagination amplifies the musical metre and verse synchronisation, drawing listeners in especially. The significance of this study will also aid in understanding life's true meaning through the elements present in many of the drama's themes. This essay will also examine social, cultural, and political upheavals in relation to the present, using an archetypal research methodology.

Keywords: Kalidasa's, Creative Ideas, True Love, Nature, Imagination, Social, Cultural and Political Relationship.

INTRODUCTION

The life story of Kalidasa, one of the greatest Sanskrit poets India has ever produced, is incredibly intriguing and fascinating. It is thought that he lived somewhere in the middle of the fourth or fifth century A.D., though the precise period of his fame is unknown. This roughly corresponds to the era of the renowned Chandragupta's reign, who succeeded Kumara Gupta. There is a wealth of detailed information about the places and lifestyle of the great Indian poet Kalidasa that can be found in his biography. Read on for an insightful biography of Kalidasa to learn more about him.

The term "sahitya" (literary) refers to the harmony that exists between words and meaning, which gives a sensitive mind aesthetic pleasure. The science that examines the various facets of Sahitya is known as Sahitya-Sastra. Indian poetry is renowned for its inductive ability, open-mindedness, and systematic viewpoint. The analysis of the process of aesthetic realisation, as understood by poets, is a significant contribution of Indian Poetics. The field of poetics was formerly called Alanakara-shastra. Despite the existence of Rasa, Guna, Riti, metre, guna, and dosha, Alamkara was given precedence, leading to the name Alanakara-shastra for the entire field of study. This name appears to be inappropriate as the Dhvani school gains prominence.

His poems were composed in classical Sanskrit and were typically epic in scope. His works were incorporated into dance and music, among other fine arts. Kalidasa, who was regarded as a superb writer, lived in Chandragupta's palace in Pataliputra (present-day Patna). He was one of the jewels in Chandragupta's court. Legend has it that Kalidasa was endowed with good looks. A princess was drawn to this, and he fell in love with her. The princess rejected Kalidas because he lacked intelligence and wit. After that, he worshipped Goddess Kali, who bestowed upon him intelligence and wit, making him one of the "nine gems" in Chandragupta's court.

SHAKUNTALAM

The Shakuntalam is arguably Kalidasa's most well-known and exquisite piece of art. It is Kalidasa's second play following Malavikagnimitra. The Shakuntalam narrates the tale of King

Dushyant's infatuation with the stunning Shakuntala, who also happens to be a saint's daughter. After getting hitched, they enjoy a happy life together until the king is asked to travel. A sage curses Shakuntala while he is away because she unintentionally offends him by ignoring him. Dushyant's entire memory is erased by the curse, and he is unable to recall Shakuntala or his marriage. However, the sage sympathises with her and offers a remedy, saying that if he sees the ring that Dushyant gave her, he will remember everything. But one day, while taking a bath in the river, she misplaces the ring. Following a sequence of events, a fisherman discovers a ring inside a fish and quickly brings the ring to the king. After that, the king remembers everything and runs to Shakuntala to express regret for what he did. They live happily ever after after she forgave him.

The compassionate ruler, radiant in his splendour, having wished for his spouse's return, guarded the cow born to Surabhi, treating her as though she were the earth herself, with the four oceans serving as her udders (Devadhar 22). Raghuvamsa and Kumar Sambhava both claimed that Kalidasa was an effective poet in terms of literary style. He has employed simple, logical, scientific language in both his literary and nonliterary works. Metre: Kalidasa is renowned for his exquisite use of metre and imagination. In poetry, metre (Chanda) is very important. He has employed various meters in various contexts. This indicates that he believes certain meters should be used in certain circumstances. For instance, he used Mandakranta to represent the rainy season, Vasnatha to represent veera rasa, and Vasanttilika metre to signify the completion of an endeavour.

KALIDASA

Most likely lived in the Christian era's fifth century. Even with its approximation, this date must still be given with great caution as it is far from certain. Although there are no authentic biographical details available, the writer was highly well-liked during his lifetime and is still considered the greatest Sanskrit poet by Hindus. Thus, we are faced with one of literary history's most notable issues. Because of his countrymen's peculiar blindness to the significance and interest of historical fact, rather than their disregard for Kalidasa's writings, we are ignorant. India is unmatched by any European country in its critical fervour for its own literature. There has been an uninterrupted line of savants in India who have given their all to the preservation and interpretation of the country's masterworks for a period of time that should be measured in millennia rather than centuries. Poets have searched for the perfect way to express their admiration for their forebears, and there are many editions, recensions, and commentaries available. However, when it comes to reconstructing the life of their greatest poet, all we have to go on are some intriguing legends and the information we can glean from the writings of a man who rarely mentions himself.

One of these legends, though it places Kalidasa and has, as far as we can tell, no grain of historical truth, deserves to be told for its own intrinsic interest.This story says that Kalidasa was the child of a Brahman. He was abandoned at the age of six months and taken in by an ox-driver. Despite not having received a formal education, he developed into a man of exceptional beauty and grace. The dismissed therapist devised a vicious retaliation. His unwavering silence, which seemed to the princess—as it actually did—to be a sign of great wisdom, as well as his striking beauty left her speechless. They visited the temple together, and she expressed her desire to wed Kalidasa. However, as soon as the ceremony was completed, Kalidasa saw a bull. The bride was incensed when the secret was revealed, as his early training proved to be too much for him. Servant of Kali. He promised that he would always treat his princess as his teacher, treating her with great respect but without becoming too close. He felt that he owed her this happy change in his very nature. This was more than the lady had anticipated; she became enraged once more and cursed Kalidasa to die at the hands of a woman. The story goes on to say that this curse was eventually lifted. A certain king had composed a half-stanza of verse and had promised a substantial payment to the poet who could honourably finish it. Without any trouble, Kalidasa finished the stanza; however, a woman he loved found out about his lines and, envious of her own reward, killed him.

According to another legend, Kalidasa travelled to a Vishnu shrine in Southern India along with two other well-known writers, Bhavabhuti and Dandin. Another depicts Bhavabhuti as Kalidasa's contemporaries who are envious of the less reclusive poet's stature. These tales have to be false, since

the three writers were undoubtedly not of the same generation, but they exhibit a genuine inclination in thinking that brilliance seeks out genius and is rarely isolated.

The stories that associate Kalidasa with King Vikramaditya and the literary luminaries of his court have been influenced by this innate belief. Even though this tradition is quite late and may never be able to distinguish the real from the fantastic, it has undoubtedly expanded and possibly even partially falsified the facts. So, we are on more solid ground here.

Poems and education were greatly favoured by King Vikramaditya. During his rule, Ujjain was the world's most brilliant capital, and it hasn't lost any of the shine that that magnificent court bestowed upon it. Nine particularly notable men were present among the distinguished men; these nine are referred to as the "nine gems." Among the nine gems were poets and scientists from the fields of astronomy, medicine, and lexicography. While it is true that some of the details of this late tradition surrounding the nine gems are questionable, the essential idea—that there was a significant artistic impulse producing works that would endure—was undeniable at this time and place. During the Vikramaditya era, Ujjain meritoriously coexists with Athens, Rome, Florence, and London during their respective golden ages. This is the important piece of evidence supporting Max Müller's much-maligned theory regarding the renaissance of Sanskrit literature. As some seem to believe, the discovery of some literary works that predate Kalidasa disproves this theory. However, this is completely untrue. One could even argue that there is only one true Renaissance man in those exceptional and joyous centuries when a figure of the calibre of Homer, Vergil, Kalidasa, or Shakespeare appears.

It is noteworthy to note that centuries of light in India have occasionally accompanied centuries of intellectual darkness in Europe. The Vedas were mostly written before Homer; Kalidasa and his friends lived during a time when Rome was in danger from barbarian invasion.

Some details about Kalidasa's life taken from his own writings may be added to the sparse and hazy data of late traditions. Only in the prologues to his three plays does he mention his own name, and he does so with a modesty that is both endearing and alluring. Some of the Indian poets have a communicative quality that one wishes they had more of. Only once, in the verses that open his epic poem The Dynasty of Raghu, does he speak in the first person. We sense his modesty here as well, and again, we are denied access to specifics regarding his life.

The writings of Kalidasa indicate that he lived in Ujjain for a significant portion of his life. He makes repeated references to Ujjain in a way that would be difficult for someone to understand if they were unfamiliar with the city. He focusses on the city's charms in particular in his poem The Cloud-Messenger, where he even asks the cloud to detour during his protracted journey so he won't miss the opportunity to get to know it.

Further information reveals that Kalidasa visited many parts of India. The Dynasty of Raghu's fourth canto recounts a journey across the entirety of India and even into areas that lie outside of its constrained boundaries. It is difficult to accept that Kalidasa had not undertaken such a "grand tour" for himself; there may be a great deal of validity to the custom that sends him on a pilgrimage to Southern India. Both The Cloud-Messenger and the thirteenth canto of the same epic recount extensive travels across India, most of which pass through areas that are remote from Ujjain. The mountains leave the biggest impression on him. The Himalayas are prevalent in his works. Not a single one of them is not at least somewhat reminiscent of mountains, with the exception of his first play and the little poem titled The Seasons. One could say that The Birth of the War-god is made up entirely of mountains. Furthermore, he was drawn to the Himalayan grandeur and sublimity because, as a Hindu critic has pointed out quite pointedly, he is the only Sanskrit poet to have written about a particular flower that grows in Kashmir. He was less interested in the sea. For him and the majority of Hindus, the ocean was not a route to exploration but rather a stunning and terrifying barrier. The Indian subcontinent is what Kalidasa refers to as the "sea-belted earth" in his speech.

That Kalidasa was a man of sound and considerable education is another inference that can be made from his writings. He was not a learning prodigy in the sense of Bhavabhuti in his native land or Milton in England, but no man could write as well as he did without diligent and astute study. Firstly, at a period when Sanskrit was somewhat of an artificial tongue, he possessed a very precise

understanding of the language. This is a point that is sometimes overemphasised, as though Indian classical writers were writing in a foreign tongue. In any language, every writer—poets in particular—writes in an unusual style; in other words, he doesn't write as he speaks. It is true, however, that in Kalidasa's day the divide between written language and vernacular was greater than it has often been. The Hindus themselves believe that mastering the "chief of all sciences, the science of grammar," requires twelve years of study. Kalidasa's works provide ample evidence of his mastery of this science.

He was also an expert in the works on dramatic theory and rhetoric, two topics that Hindu savants have tackled with remarkable, if occasionally startling, inventiveness. In addition to his knowledge of astronomy and law, Kalidasa possessed the profound and subtle systems of philosophy.

But Kalidasa was read widely in more than just written works. It is rare that a man has observed the workings of living nature on our planet with such accuracy as he did, although of course his accuracy was that of a poet rather than a scientist. We who are raised among other animals and plants lose a lot, but we can still be grateful for his "bec-black hair," his ashoka tree that "sheds his blossoms in a rain of tears," and his river that appears to be shrouded in mist.

Any great poet's religion is always interesting to learn about, but Hindu poets are particularly interesting to learn about because Hindus have always been deeply and imaginatively religious people. As far as judgement allows. Among the startling sects, Kalidasa moved with compassion for everyone and hatred for none. Shiva is prayed to in the dedicatory prayers that open his plays. Shiva is the patron of literature, so this is really just a convention. While The Birth of the War-god, one of his epics, is unmistakably Shivaistic, The Dynasty of Raghu is equally inclined towards Vishnu. The rival dualism of the Sankhya system is equally clearly expressed in the hymn to Brahma in The Birth of the War-god, if the hymn to Vishnu in The Dynasty of Raghu is an expression of Vedantic monism. Furthermore, the principles of Buddhism and Yoga are mentioned with kindness. Thus, we have good reason to conclude that Kalidasa was, at least when it came to religion, what William James would refer to as "healthy-minded," and definitely not a "sick soul."

When someone reads and rereads Kalidasa's poetry, there are other impressions of his life and personality that, while less easily verifiable, eventually take on the status of convictions in their minds. He was undoubtedly physically attractive, and the attractive Hindu man is a very fine example of manhood. One can tell that he was fascinated by women because he was fascinated by them. It is known that kids adored him. It becomes evident that he never went through any of the dark, shattering experiences that accompany persistent religious doubt or the agony of hated love; rather, he walked among men and women with a calm, godlike gait, neither self-indulgent nor austere, and with an ever-vigilant mind and senses that took in all that was beautiful. We are aware of the popularity of his poetry during his lifetime, and there is no questioning the attractiveness of his personality, even though it's likely that none of his contemporaries fully appreciated his inventiveness. Because of his unique balance, he was equally at ease in a grand court and on a desolate mountain, surrounded by people of all social classes. In life, such men are never truly appreciated. Even after they pass away, they keep growing.

All seven of these works are composed of prose plays with a liberal dose of lyric and descriptive stanzas; the remaining three are composed entirely of poetry, as are the Sanskrit plays. It is impossible to compare any of the poetry, even in the epics, to English blank verse because it is all stanzaic in nature. Classical Sanskrit verse is structurally similar to well-known Greek and Latin forms in that rhythm is created by quantity rather than accent, and rhyme is not used consistently. The rhymed stanza strikes me as the most natural form for translation into English.1 In this work, it has been employed, albeit perhaps too rigidly, wherever the original is in verse.

Like in other nations, the theatre proved to be a friendly medium for many of the greatest poets, even in India. Indian theatre is quite unique, but it is more akin to contemporary European theatre than Greek theatre because, for the most part, its plays are about love between men and women and have no religious overtones. Tragic events are allowed, but a tragic conclusion is not. In fact, nothing considered offensive—not even fighting or kissing—is allowed on stage; perhaps Europe can take a cue from this regarding personal preference. Simple and limited stage props were used, with special attention paid to the music. Women performed the female roles. Long monologues are extremely rare

in the plays—even the inescapable prologue is split between two speakers—but lyrical digression was acceptable to the Hindu audience.

One could argue that, despite the need for qualification on both ends, Indian dramas are more poetically charming than contemporary European dramas, but they also lack action and character uniqueness.

The Mahabharata and the Ramayana, two epics that are more like the Iliad and Odyssey in spirit than in external form, are very different from the Kavyas. The kavya is a narrative poem composed by an educated poet with all the tools of complex rhetoric and metric in a sophisticated era. The topic is taken from ancient mythology. The poem is composed of cantos, each of which is composed of stanzas rather than blank verse. A poem may use multiple stanza-forms, but not all of them in the same canto. The final verses of a canto are sometimes written in a metre that is more expansive than the other verses.

The Cloud-Messenger is a poem that I have classified as elegiac, even though it might not strictly fit the definition. The Hindus categorise it as a kavya along with The Dynasty of Raghu and The Birth of the War-god, but this just serves to highlight their shame. Actually, Kalidasa invented a brand-new genre with The Cloud-Messenger. Since the entire poem is translated below, no more explanation is required at this point.

Although the quality of Kalidasa's work is what makes him famous, his fame would be greatly diminished if his output had been less in quantity and variety. The volume of his writing in India is a greater measure of his originality and influence than it would be in Europe, as the classical poets were trained to be excessively meticulous and wrote for an extremely critical public. The renowned Bhavabhuti devoted his entire life to creating three plays, but despite his strong character, he was plagued by the meticulousness of his work. In this case, as in others, Kalidasa maintains both his intellectual equilibrium and his spiritual initiative. Everyone who has ever had the misfortune of holding a different opinion from an intellectual clique knows what greatness of soul is required for this matter.

It is hard to say anything meaningful to this eulogy of Kalidasa's achievements that hasn't been said before. Even though one is aware that the critic is inherently foolish, one still enjoys showering them with compliments. Either way, there will be a generous and sincere expression of admiration instead of that callous criticism that thinks itself superior to a world-renowned author in the present matter.

The best evidence of a poet's greatness is that men cannot function without him; that is, his capacity to seize and hold onto the adoration and admiration of his own people for centuries at a time, especially when those people have proven to be highly accomplished both intellectually and spiritually.

The only Sanskrit poet who can truly be said to have received any recognition at all is Kalidasa, despite the fact that his appreciation in Europe has not been as widespread as it should be. Here, language presents a truly Himalayan obstacle for him to overcome. There is only one method of presentation left because very few Europeans, even the well-educated ones, will ever be able to learn the complex Sanskrit language. Nobody is more aware than the translator of the harsh shortcomings of poetic translation. He is the only one who truly comprehends the importance of Kalidasa's victory in Europe. In 1789, Sir William Jones translated the Shakuntala for the first time. His translation was warmly greeted by Europe's greatest living poet, which was fitting. Since then, thousands of people have read at least one of Kalidasa's works, as evidenced by fresh translations and reprints of the classics; thousands more have seen it performed on stages across Europe and America.

In thirteen hundred years, how can one account for a reputation that endures forever and spreads to a new continent? It cannot be explained by any one, but there are some identified contributing factors.

Kalidasa writes about a love that is ultimately happy, despite frequently having to struggle for a while against outside obstacles. No hint of that unwell feeling that goes by the name of "modern love" can be found in any of his works. Had that not been the case, his poetry would hardly have endured; for what is more essential than all is undoubtedly joyful love that is rewarded with progeny. In his play Urvashi, he is prepared to alter and gravely harm a tragic tale that has been handed down

to him by long-standing custom in order to keep a loving couple together. The tale of Rama and Sita in The Dynasty of Raghu seems to be one notable exception. In this instance, it is important to keep in mind that Rama is a manifestation of Vishnu, and it is not appropriate to lightly alter the tale of a powerful deity in human form.

It may be an inevitable consequence of his subject that modern readers find Kalidasa's women more enticing than his men. Though there are universal manly virtues that have been emphasised differently throughout nations and eras, the man is a more erratic phenomenon. The actual woman, though, strikes me as inclusive and timeless. I know of no poet other than Shakespeare who has bestowed upon the world a cast of heroines as brave, true, sensitive, and universal as Shakuntala, Indumati, Sita, and the bride of Yaksha.

In order to truly appreciate Kalidasa's poetry, one must at least spend a few weeks in untamed forests and wild mountains, where one begins to believe that flowers and trees are real people with their own lives, happy lives at that. The vision fades when one returns to an urban setting, but the memory endures. That existence. The vision fades when one returns to an urban setting, but the memory endures, much like a profound love or a glimpse of mystic insight, as an instinctive belief in a greater truth.

Not only does Kalidasa have a sympathetic understanding of nature, but his accuracy is minute. He possesses not just the snows and windy music of the Himalayas, the powerful Ganges current, and the sacred trees, but also tiny streams, trees, and every tiny flower. The thought of Kalidasa and Darwin meeting is delightful. Since each used a similar level of creativity in conjunction with an abundance of observed facts, they would have had a perfect understanding of one another.

As I mentioned earlier, Kalidasa had a wonderful balance in his character that allowed him to feel comfortable both in a palace and in the wilderness. Shakespeare, for all his enchanted insight into the beauty of nature, is essentially a poet of the human heart, so I'm not sure with whom to compare him in this regard. That is difficult to say about Kalidasa, just as it is difficult to say that he is primarily a poet of natural beauty. It is possible to say that the two characters become one in him chemically. The concept that I am awkwardly attempting to explain is aptly summed up in The Cloud-Messenger. The second half depicts a human heart within a frame of natural beauty, while the first half describes the outside world while incorporating human emotion. The thing is done so beautifully that no one can decide which half is better. Some readers of the original text of this flawless poem are moved more by the one, while others are moved by the other. Kalidasa realised in the fifth century what Europe did not realise until the nineteenth, and even now only partially understands: that man does not reach his full potential until he recognises the dignity and value of non-human life.

CONCLUSION

It's true that some critics in the West have discussed his deformed performances and crude word plays. The question arises as to whether these critics have ever read any Elizabethan literature, since Kalidasa's style is considerably less objectionable than Shakespeare's. It is true that he had a vivid imagination and was "excelling in metaphor," as the Hindus themselves attest; it is also worth acknowledging that, in his youth and later years, he may have written things that would not have passed muster with a fully grown man. All of his poetry, though, exudes a very distinct and sophisticated sense of taste. This is hardly a matter for discussion; the reader can only offer his own view, which he is glad has been confirmed by the unanimous agreement of fifty generations of Hindus, who are by far the most knowledgeable arbiters of this matter.

Even though it is simple to continue analysing Kalidasa's works, analysis can never provide a complete explanation of life. The only genuine type of criticism is subjective. We know that Kalidasa is a very great poet because the world has not been able to leave him alone.

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अजस्रा

अखिल-भारतीय-संस्कृत-परिषद्

लखनऊ

नियमाः

१— अजस्रानाम्नीयं त्रैमासिकी संस्कृतपत्रिका मकर–मेष–कर्क– तुला– सङ्क्रान्तिषु (जनवरी–अप्रैल–जुलाई–अक्तूबरमासेषु) प्रकाशिता भवति।

२— अस्याः पत्रिकाया उद्देश्यं संस्कृतसम्पदां संरक्षणम्, विभिन्नपद्धतिजुषां रचनानां संवर्धनम्, प्रातिभनूतनकृतीनां संसर्जनञ्च।

३— समालोचनाभिलाषुकैः प्रकाशकैर्लेखकैर्वा नवीनकृतीनां द्वयी प्रेषणीया।

४— पत्रिकायामस्यां कवितालेखकथानाटकादीनि शोधनिबन्धाश्च स्थानं प्राप्स्यन्ति।

५— प्रकाशनाय प्रेषिताः सर्वविधा रचना एकस्मिन् पत्रपृष्ठे सुस्पष्टाक्षरै– र्लिखिताः टङ्किता वा स्युः।

६— कृतीनां प्रकाशनस्य सम्पादनस्य च सर्वाधिकारः सम्पादके संरक्षितोऽस्ति।

७— अस्वीकृता लेखाः टिकटसहितपत्रपुटके लब्धे सति लेखकेभ्यः प्रत्यावर्तिष्यन्ते।

अजस्रा

सम्पादक:
प्रो० प्रयागनारायणमिश्रः

अखिल–भारतीय–संस्कृत–परिषद्
देववाणी–भवनम्, अलीगञ्जम्,
लखनऊ–२२६०२४

श्रीमद्भगवद्गीतायां कर्ममीमांसाविश्लेषणम्

डॉ. ए. गुनासीलन

सहायक–प्राध्यापक
संस्कृत–विभागः
सौराष्ट्र–कॉलेज, मधुराई

भगवतादागता गीता भगवद्गीता। अस्याः गीतोपदेश इत्यपि नामान्तरमस्ति। श्रीकृष्णः अत्र उपदेशकः श्रोता अर्जुनश्च। वैदिकसनातनवर्णाश्रमधर्मावलम्बिनां हैन्दवानां धर्मग्रन्थत्वेन विद्यते एषा भगवद्गीता। गीतायाम् अष्टादशाध्यायाः सन्ति। अस्याः भगवद्गीतायाः मोक्षशास्त्रम्, ब्रह्मविद्या, गीतोपनिषत् इत्यादीनि नामानि अपि सन्ति। प्रत्येकस्यापि अध्यायस्य पृथक् नाम वर्तते। कृष्णार्जुनयोः संवादनानुरूपेण अध्यायाः विभक्ताः।

भगवद्गीतावैशिष्ट्यम्

या उपनिषदां आत्मविचारः साङ्ख्यानां ज्ञानविचारः तथा सृष्टिक्रमः, उपासनाविवरणम् भगवद्विचाराः एतत् सर्वमपि बोधयति सा एव भगवद्गीता। येभ्यः वेदाध्ययनाधिकारः नास्ति तेभ्यः अपि वेदान्तस्य तथा धर्मस्य सारं पाठयति एषा भगवद्गीता। व्यासविरचितं महाभारतमेव गीतायाः स्रोतः। भगवद्गीतायाः प्रस्थानत्रये द्वितीयं स्थानं दत्तं वर्तते। परमज्ञानं, परिशुद्धभक्तिः, निष्कामकर्माणि एतेषां त्रयाणामपि मोक्षसाधकत्वं वर्तते इति भगवद्गीता अभिप्रैति। त्रयः आचार्याः तेषां सिद्धान्तानुसारं गीतायाः भाष्यं रचयामासुः। श्रीमद्भगवद्गीतायां भगवता श्रीकृष्णेन अर्जुनाय ये उपदेशाः प्रदत्ताः, तेषां दिशा सुस्पष्टाऽस्ति। तत्र योगविषये विवेचनं अध्यात्मविवेचनमपि सरलं स्पष्टञ्चास्ति। अध्यात्मक्षेत्रस्य सर्वेषां सिद्धान्तानां समन्वयं कृत्वा एकस्य निश्चितस्य सिद्धान्तस्य स्थापनायाः कार्यं कठिनं भवति, अतो भगवता शङ्करपादेन कथितम्– "तदिदं गीताशास्त्रं समस्तवेदार्थसारसंग्रहभूतं दुण्वज्ञेयम्" इति। गीतायां यानिदार्शनिकतत्त्वानि विवेचितानि, तान्येव

प्रकारेणोल्लिखितानि सन्ति।

कर्ममीमांसा

समाजे मनुष्याणां दिनचर्या विभागद्वयेन विभज्यते– तत्र केचन कर्म कुरुते तेषां विश्लेषणं कर्ममीमांसायां, केचन ज्ञानार्जनं कुरुते तेषां विश्लेषणं ज्ञानमीमांसायां च अन्तर्भवन्ति। कर्मज्ञानमीमांसाद्वयं मनुष्याणां जीवनविश्लेषणाय अपकरोति।

कर्ममीमांसान्तर्गत कर्मणां विभाजनं अनेकप्रकारैः भवति। यथा – १. नित्यकर्म, २. नैमित्तिककर्म, ३. काम्यकर्म, ४. नित्यनैमित्तिककर्म, ५. नित्यकाम्यकर्म, ६. नैमित्तिककर्म च। भोजनकरणं, जलपानं, मलमूत्रविसर्जनमित्यादि कर्मणां विना मानवजीवनं असम्भवमेव। प्रतिदिनं सन्ध्याकरणं नित्यकर्म इत्यभिधीयते। प्रतिदिनं स्नानाचरणमपि नित्यकर्म एव। परन्तु विशेषरूपेण स्नानविधिस्तु नैमित्तिक कर्म भवति। प्रातः स्नानानन्तरमपि गृहसम्मार्जनकार्यं कृत्वा पुनः स्नानमाचरते तर्हि तत् नित्यनैमित्तिककर्म। विशेषफलप्राप्त्यर्थं क्रियमाण कर्म काम्यकर्म। यथा परीक्षायां उत्तीर्णताप्राप्त्यर्थं परिश्रमं करोति। पुत्रकामनया पुत्रेष्टिं करोति चेदपि काम्यकर्म एव।

कर्मणाम् आदनप्रदानानि

एतेषां सर्वप्रकारकर्मणाम् आदानप्रदानं भवति। सन्ध्याकरणावसरे प्राणशक्तिः प्रदेयम्। विना प्राणशक्तिप्रदानेन सन्ध्या न समाप्ता भवेत्। यदि सन्ध्या न क्रियते तर्हि आत्मबलप्राप्तिः न सिद्ध्येत्। अर्थात् प्रत्येकस्मिन् कर्मणि किञ्चित् प्रदानात् किञ्चित् सम्प्राप्यते। अत एव एष व्यवहारः सनातनधर्म इति नाम्ना व्यवह्रियते। भोजनकरणकर्म सर्वे कुर्वन्त्येव। प्रायः अन्नं, सूपः, शाकादीनि भोजनरूपेण व्यवह्रियन्ते। परन्तु वस्तुतः अन्नं सप्तप्रकारकं भवति "यत् सप्तान्नानि मेधया तपसाजनयत् पिता"। सप्तान्नानि– १. ज्ञानं, २. क्रिया, ३. वाक्, ४. वायुः, ५. तेजस्, ६. जलम्, ७. मृत्तिका च।

अत्र ज्ञानस्य सम्बन्धः मनसा, क्रियायाः सम्बन्धः प्राणेन च भवति। अवशिष्ट पञ्चान्नानां सम्बन्धः वाचा अर्थात्स्थूलशरीरद्वारा भवति। मन– प्राण– वाक् एतेषां संयोगादेव शरीरनिर्माणं भवति। उपनिषदनुसारेण अस्माकं शरीरे यावन्ति अस्थीनि तानि पृथिवीतत्त्वैः विनिर्मितानि, रक्तादि तरलपदार्थाः

जलतत्त्वेन, शरीरस्य उष्णता तेजसा, श्वासप्रक्रिया वायुना, शरीरे रिक्तस्थानम् आकाशेन च निणमतिमिति उल्लिखितमस्ति ।

"अस्मिन् पञ्चात्मके शरीरे तत्र यत् कठिन सा पृथ्वी यद् द्रवं ता आपः यदुष्णं तत्तेजः उत्सङ्करति स वायुः यत् सुषिरं तदाकाशम् इति" । एतेषां पञ्चभूतानां स्थितिः प्राणं विना नैव सम्भाव्या । तथैव प्राणः मनः विना सम्भवो न स्यात् । सूर्यः सर्वदा अस्माकं सप्तान्नानि गृह्णाति । अतः शरीरे यदा यस्याल्पत्वं सम्भवेत् तदा सप्तप्रकारकान्नग्रहणं करणीयमेव । सप्तान्नेषु ज्ञानादेव अस्माकं शरीरं बली भवेत् । क्रियया प्राणं बली भवेत् । वाचः अकाशात् भोजनमुपलभ्यते । एवं प्रकारेण श्वासक्रियायै वायुः, उष्णतायै तेजोऽपेक्षते । ज्ञान–क्रिया–शब्द– तेज–वाय्वादि पञ्चप्रकारकान्नानि स्वतः प्राप्यन्ते परन्तु जलं तथा मृत्तिका अर्थात् तण्डुलगोधुमादीनि प्रयत्नपूर्वकमेव साध्यन्ते । यः कोऽपि मनुष्यः कर्मक्रियते तत् नैमित्तिककर्म भवति । अस्माकं शरीरेऽपि त्रिभागाः सन्ति स्थूल –सूक्ष्म–कारणश्चेति । आयुर्वेदानुसारं एते शरीर–सत्त्व–आत्मा नाम्ना व्यवहीयन्ते । स्थूलशरीरस्यापि वात–पित्त–कफमिति धातुत्रयं वर्तते । वातः वायुसम्बन्धः, पित्तश्चाग्निसम्बद्धः । एतयोः समतुल्यताऽस्ति चेत् शरीरं स्वस्थं भवति । गीतायाम् उक्तं यथा–

युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु ।

युक्तस्वप्नावबोधस्य योगो भवति दुःखहा ।।[१]

युक्ताहारग्रहणं नित्यकर्म भवति । यदि शरीरे रोगो जायते तर्हि औषधसेवनं नैमित्तिककर्म भवति ।

आयुर्वेदे सत्त्वगुणः एव दर्शने सूक्ष्मशरीरमित्यभिधीयते । अत्र सत्त्व– रज– तमो नामक त्रिगुणाः मिश्रिताः भवन्ति । एतेषां त्रयाणां तारतम्याधारेणैव अस्माकं प्रकृतिर्निर्मीयते । यत्र गुणः तत्र दोषोऽवश्यं भवत्येव– "सर्वारम्भा हि दोषेण धूमेनाग्निरिवावृताः" नाम यत्र गुणो नास्ति तत्र दोषोऽपि न भवत्येव । यत्र दोषो नास्ति तत्र न गुणोऽवशिष्यते ।

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१. श्रीमद्भगवद्गीता– ६.१७

त्रिविधशरीराणि

स्थूलशरीरस्य घटकानि वात– पित्त– कफश्च। सूक्ष्मशरीरस्य घटकानि काम–क्रोध–लोभ–मोह–मद–मात्सर्याणि भवन्ति। एतेषु वातपित्तकफाः रजोगुणात् अन्तिमत्रयः तमोगुणादुत्पन्नाः भवेयुः। विना षट्तत्त्वानां अपेक्षया सूक्ष्मशरीरं वा मनो वा न सम्भवेत्। एतेषां षण्णां सन्तुलनाय सन्ध्यातर्पणं, गुरुसेवा, देवदर्शनादि नित्यकर्माणि करणीयानि। कारणशरीरे विद्या–अविद्या च भवतः। एतयोर्मध्ये सन्तुलनाय नित्यकर्म करणीयम्। त्रिप्रकारकशरीरेषु स्थूलशरीररक्षा आयुर्वेदद्वारा, सूक्ष्मशरीररक्षा धर्मशास्त्रद्वारा, कारणशरीररक्षा वेदान्तद्वारा सम्भाव्यते। एते त्रयः परस्परसारूप्यतया व्यवहरन्ति। एतेषां त्रिप्रकारकशास्त्राणां कृते त्रिप्रकारककर्मविधानमपि भवत्येव। उदाहरणतया आयुर्वेदे सन्तुलितभोजनविधानं नित्यकर्माणि तथा रोगप्राप्त्यनन्तरं औषधसेवनविधानं नैमित्तिककर्माणि, शरीरपुष्ट्यर्थ रसायनसेवनविधानं काम्यकर्माणि अन्तर्भवन्ति। त्रिप्रकारककर्मसु नित्य–नैमित्तिक–कर्माणि कदापि न त्यज्यानि। कुत इति चेत् एताभ्याम् द्वारा एव स्वरूपस्य रक्षा भवति। यदि स्वरूपं नश्यति तर्हि मोक्षसिद्धिर्न भवेत्। न युक्ताहारग्रहणे सति शरीरं दुर्बलतां प्राप्नोति तदा धर्मसाधनापि नैव साध्येत्। अतः स्वरूपरक्षणायै नित्यनैमित्तिककर्मबन्धनानि न कारणानीति विज्ञेयानि।

बन्धनस्य कारणं काम्यकर्म भवति। काम्यकर्माणि विशेषवृद्धिप्राप्तये कुर्वन्ति। विशेषवृद्धेः कामना। न तु स्वरूपरक्षायै अपि तु रागवशात् जायते। तत्र राग एव आसक्तिरूपकारणवासानानि उत्पन्नं करोति। वासनाद्वारा एव युक्तायुक्तविचक्षणा सम्पद्यते। वासनेयं जैनपरम्परायां राग इति बौद्धपरम्परायां तृष्णा नाम्ना व्यवहियन्ते।

गीतायामुपदिष्टा–निष्कामकर्म

सृष्टेः उत्पत्तेः प्रारम्भः कामनाज्जाता प्रजापतेः कामनाद्वारा एव सृष्टिरारब्धा। अस्माकं कार्येषु प्रत्यक्षपरोक्षरूपेण काऽपि कामना भवत्येव। अत्र तु कामना सहज–कुत्रिमेति द्विविधा। सहजकामनया क्रियमाणानि कर्माणि निष्कामकर्माणि। गीतानुसारेण सहजकामनया प्रेरितकर्माणि न बन्धनहेतवः अपितु कृत्रिमकामनया प्रेरितकर्माणि सद बन्धनकारणानीति विज्ञायते।

निष्कामकर्मणः मार्गः

यो जनः साधकः रागद्वेषरहितस्सन् इन्द्रियैः विषयभोगं कुर्वन्नपि प्रसादं प्राप्नुयात्। अत्र प्रसादस्यार्थः निर्मलता, प्रसन्नता च। रागद्वेषावेव साधकस्य निर्मलतां प्रसन्नताञ्च दूरीकुरुतः। चक्षवादि इन्द्रियाणि रूपादि विषयेषु प्रवृत्तानि भवन्ति चेत् साधकाय मलिनता, दुःखकारणानि भवन्ति। दुःखानाम् अभावफलरूपः बुद्धेः स्थिरता एव—

प्रसादे सर्वदुःखानाम् हानिरस्योपजायते।

प्रसन्नचेतसो ह्याशु बुद्धिः पर्य्यवतिष्ठते।।[२]

अस्माकं बुद्धिः दुःखकारणवशात् विचलितं भवेत् तथैव कुमार्गेऽपि नीयते। एतदर्थं बुद्धिः सर्वदा स्थिररूपेण भवितव्या।

मनश्चाञ्चल्यम्

नास्ति बुद्धिरयुक्तस्य न चायुक्तस्य भावना।

न चाभावयतः शान्तिरशान्तस्य कुतः सुखम्।।[३]

यस्य बुद्धिः चञ्चलता भवेत् तस्य बुद्धिरस्त्यपि बुद्धेः अभावस्थितिरित्येव भाव्यम्। कुत इति चेत् सा बुद्धिः सत्— असतः विवेकं सम्यक्कर्तुं न पारयेत्। सत्— असतः विवेक एव भावना इत्यभिधीयते। यस्मिन् विवेकबुद्धिः न भवेत् तस्य न शान्तिः न सुखञ्च। श्रीकृष्णस्य वचनानुसारेण केनापि प्रकारेण चित्तचाञ्चल्यनिरोधः कर्तुं शक्यते इति ज्ञायते। विश्वामित्रसदृशः एव मेनकाविषये स्वमनोनिग्रहं तत्याज। तथा साधारणमनुष्याणां का स्थितिरिति गीतायामुच्यते—

इन्द्रियाणां हि चरतां यन्मनोऽनुविधीयते।

तदस्य हरति प्रज्ञां वायुर्नावमिवाम्भसि।।[४]

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२.   श्रीमद्भगवद्गीता— २.६५

३.   श्रीमद्भगवद्गीता— २.६६

४.   श्रीमद्भगवद्गीता— २.६७

यो साधकः कामनात् सदा मुक्तो भवेत्। प्रथमावस्थायां उत्थाप्यवाञ्छा नाम कुत्रिमवाञ्छा त्याज्या। मद्यपानं कुत्रिमवाञ्छा, आहारग्रहणं स्वाभाविकवाञ्छा। सन्यासिनां भोजनप्राप्तिः– अप्राप्तिश्च समाना परन्तु गृहस्थजनानां कृते तथा न। सन्यासिनः सदा ज्ञानार्जने रताः भवन्ति।

आपूर्यमाणमचलप्रतिष्ठं समुद्रमापः
प्रविशन्ति यद्वत्।
तद्वत् कामा यं प्रविशन्ति सर्वे स
शान्तिमाप्नोति न कामकामी।।[५]

उपसंहारः

वाञ्छाः त्याज्याः न तु कर्माणि इति गीतायाः विशिष्टोपदेशो सर्वजनहितकराय प्रवर्तते। यत्र न वाञ्छा तत्र न ममता अर्थात् निर्ममता। यत्र निर्ममता तत्र अहङ्कारो नैव सिध्येत्। प्रत्येकजनः साधकरूपेण कर्म समाचरणीयः तदपि निःस्पृहेण, निर्ममत्वेन निरहङ्काररूपेण इति ज्ञेयम्।

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Advances in Zoology and Botany

Toxic Effect of Green Seaweeds on the Larval Instars of Vector Mosquitoes

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ABSTRACT

Seaweed species have been reported for their toxic effects on mosquito larvae. In the present study, the petroleum ether, chloroform, acetone and methanol extracts of two green seaweeds, Caulerpa racemosa and Ulva fasciata were tested for toxicity against the second and third instar of Aedes aegypti and Culex quinquefasciatus as per the guidelines of World Health Organization at concentrations of 100, 200, 300, 400 and 500 mg/L for 24 hours. Caulerpa racemosa extracts recorded 100% mortality at the highest concentration on the second and third instar of Aedes aegypti and Culex quinquefasciatus, and maximum larvicidal activity was exhibited by the chloroform extract, and their respective LC_{50} values were 140.49 and 144.554 mg/L, and 153.704 and 158.313 mg/L. In the case of Ulva fasciata, the chloroform extract exhibited 100% mortality at the highest concentration on the second and third instar of Aedes aegypti and Culex quinquefasciatus, and also the maximum larvicidal activity with LC_{50} values of 158.358 and 166.025 mg/L; and 154.156 and 187.435 mg/L against the second and third instar larvae, respectively. Overall results indicated that amongst the two green seaweeds tested, Caulerpa racemosa exhibited more activity when compared to Ulva fasciata, and with reference to solvent extracts, the chloroform extract exhibited maximum activity against the larval instars of the vector mosquito species tested. With regard to the vector mosquito species tested, Aedes aegypti was more susceptible than Culex quinquefasciatus, and in the case of instars, second instar larvae were more susceptible than the third instar. In conclusion, the bioassay result of the present study indicated the larvicidal property of the chloroform extract of both the green seaweeds against the larval instars of vector mosquitoes, which encourages further investigation on its bioactive compounds that might own virtuous larvicidal properties when isolated in pure form.

KEYWORDS
Green Seaweeds, Caulerpa racemosa, Ulva fasciata, Solvent Extracts, Larvicidal Activity, Aedes aegypti, Culex quinquefasciatus

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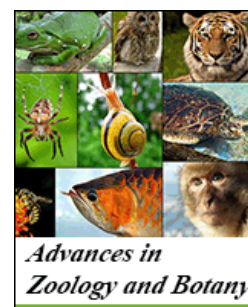
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