GANESAR COLLEGE OF ARTS AND SCIENCE

(Accredited with 'B' grade by NAAC)

MELAISIVAPURI - 622 403, PUDUKKOTTAI, TAMILNADU

Phone: 04333 – 247218, 247603

STUDENTS PROJECT

ACADEMIC YEAR 2022-23

கணேசர் கலை அறிவியல் கல்லூரி, மேலைச்சிவபுரி

தேர்வு மையம் எண்: 010

ஏப்ரல்-2023, எம்.ஏ திட்டக்கட்டுரைத் தலைப்புகள்

வ.எண்	மாணவர்கள் பெயர்	பதிவு எண்	கட்டுரைத் தலைப்பு	வழிகாட்டியின் பெயர்
1.	செ.அனுராதா	P21100375	"முல்லைக்கலி வாழ்வியலும் பண்பாடும்"	முனைவர் சி.குறிஞ்சி
2.	கி.தனலெட்சுமி	P21100376	"நாட்டுப்புற விளையாட்டுகள்"	முனைவர் பெரி.அழகம்மை
3.	செ.தனலெட்சுமி	P21100377	"தற்காப்பு ஆயுதம் வளரி"	முனைவர் மா.தமிழ்ச்செல்வி
4.	செ.தனலெட்சுமி	P21100378	"சோ.தர்மனின் கூகை நாவல் - ஓர் ஆய்வு"	முனைவர் ம.செல்வராசு
5.	ப.திவ்யபாரதி	P21100379	"பொன்னமராவதி வட்டாரக் கோவில்களும் வழிபாட்டு முறைகளும்"	முனைவர் பொன்.கதிரேசன்
6.	ப.கோமதி	P21100380	"சிலையெழுபதும் வன்னியர்களும்"	முனைவர் சே.பிருந்தா
7.	மொ.மோகனா	P21100383	"திருமங்கையாழ்வார் பாசுரங்களில் வைணவ நெறி"	முனைவர் வே.அ.பழனியப்பன்
8.	ப.மோகனப்பிரியா	P21100384	"தமிழர் பண்பாட்டில் கார்த்திகைத் திருநாள்"	முனைவர் சி.முடியரசன்
9.	கு.பவித்ரா	P21100385	"பொன்னமராவதி வட்டார மக்களின் வாழ்வியல்"	முனைவர் வே.நித்திய கல்யாணி
10.	செ.ராதிகா	P21100386	"திருக்கருவைப் பதிற்றுப்பத்தந்தாதியில் இறையியல்"	முனைவர் கதி.முருகேசன்

PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI - 622 403

ஆய்வாளர் உறுதிமொழி

செ. ராதிகா

பதிவு எண்: P21100386
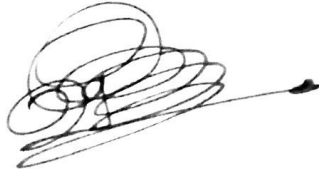
முதுகலை இரண்டாம் ஆண்டு

தமிழ் உயராய்வு மையம்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403

      "**திருக்கருவைப் பதிற்றுப்பத்தந்தாதியில் இறையியல்**" என்னும் தலைப்பில் அமைந்த இவ்வாய்வேடு பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப் பாடப்பகுதிக்காகச் செய்யப்பட்ட இவ்வாய்வேடு என் சொந்த முயற்சியால் உருவானதாகும். இதற்கு முன்பு வேறு எந்தப் பட்டத்திற்கும் இவ்வாய்வேடு அளிக்கப்பெறவில்லை என்று உறுதி கூறுகிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 10·4·2023

<div style="text-align:right">

செ·ராதிகா

ஆய்வாளர்

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<div style="text-align:center">

நெறியாளர்

முனைவர்.கதி. முருகேசன்

உதவிப்பேராசிரியர், தமிழ் உயராய்வுமையம்

கணேசா கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622403

</div>

நெறியாளர் சான்றிதழ்

முனைவர் பெரி.அழகம்மை எம்.ஏ., பிஎச்.டி

உதவிப் பேராசிரியர்

தமிழ்த்துறை

தமிழ் உயராய்வு மையம்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி.

"நாட்டுப்புற விளையாட்டுகள்" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்ட பாடப் பகுதிக்கு அளிக்கப்பெற்ற இவ்வாய்வேடு என் மேற்பார்வையில், மாணவி கி. தனலெட்சுமி (பதிவுஎண்: P21100376) என்பவரால் வழங்கப் பெற்றதாகும்.

இவ்வாய்வு ஆய்வாளரால் தன்னியலாகச் செய்யப்பட்டது என்றும் இவ்வாய்வின் மீது அவருக்கு வேறு எந்தப் பட்டமும் வழங்கப்பெறவில்லை என்றும் சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 20.04.2023

நெறியாளர்

முனைவர் பெரி. அழகம்மை எம்.ஏ.,பிஎச்.டி.,

உதவிப் பேராசிரியர், தமிழ் உயராய்வு மையம்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி - 622 403

புதுக்கோட்டை மாவட்டம்.
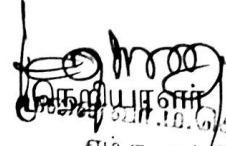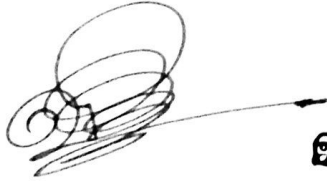
முதல்வர்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

முனைவர் ம. செல்வராசு எம்.ஏ., எம்.ஃபில்., பி.எட்., பிஎச்.டி.,
முதல்வர், தமிழ்த்துறை,
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி — 622 403

  சோ. தர்மனின் கூகை நாவல்" — ஓர் ஆய்வு என்னும் தலைப்பில்
செ.தனலெட்சுமி (பதிவு எண்: P21100378) செய்துள்ள இவ்வாய்வேடு
அவர் கணேசர் கலை அறிவியல் கல்லூரி முதுகலைத் தமிழ்த்துறை
மாணவராக இருந்து ஆய்வு செய்த காலத்தில் தன்னியலாகச்
செய்யப்பட்டது என்றும், இவ்வாய்வேட்டின் மீது ஆய்வாளருக்கு வேறு
எந்தப் பட்டமும் அளிக்கப்பெறவில்லை என்றும் சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி
நாள்: 10 - 04 - 2023

நெறியாளர் சான்றிதழ்

முனைவர் மா.தமிழ்ச்செல்வி.,
உதவிப்பேராசிரியர், தமிழ்த் துறை,
தமிழ் உயராய்வு மையம்,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி-622 403.

"தற்காப்பு ஆயுதம் வளரி" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப்பகுதிக்கு செ.தனலெட்சுமி பதிவு எண்: (P 21100377) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரி தமிழ்த்துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம் : மேலைச்சிவபுரி
நாள் : 10. 04. 2023

நெறியாளர்
முனைவா.மா.தமிழ்ச்செலவி எம்.ஏ..ந.எச்.ட
உதவிப் பேராசிரியர், தமிழ் உயராய்வு மையம
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி-622403

முதல்வா
முதல்வா
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

முனைவர் பொன். கதிரேசன் எம். ஏ., எம். ஃபில்., டி. பிடி., பிஎச். டி.,

உதவிப் பேராசிரியர்

தமிழ் உயராய்வு மையம்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403.

"பொன்னமராவதி வட்டாரக் கோயில்களும் வழிபாட்டு முறைகளும்" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு செல்வி. ப. திவ்யபாரதி (பதிவு எண்: **P21100379**) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.
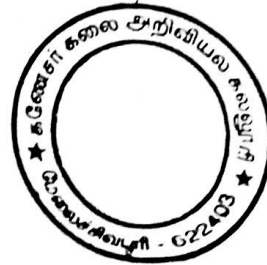
இடம்: மேலைச்சிவபுரி

நாள்: 10 – 04 – 2023

29.03.2023

நெறியாளர்

முனைவர் **பொன்.கதிரேசன்**

M.A., M.Phil.,T.P.T.,UGC(NET).,DIP.YOGA.,PH.D.,

உதவிப்பேராசிரியர் & ஆய்வு நெறியாளர்

தமிழாய்வுத்துறை,கணேசர் கலை அறிவியல் கல்லூரி,

மேலைச்சிவபுரி, புதுக்கோட்டை மாவட்டம் - 622 403.

அலைபேசி: 9360507675,மின்னஞ்சல்:umaponkathir@gmail.com

முதல்வர்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

முனைவர் வே.நித்திய கல்யாணி எம்.ஏ.,எம்.:.பில்,பி.எட்,பி.எச்டி,நெட்,செட்
உதவிப்பேராசிரியர், தமிழ்த்துறை,
தமிழ் உயராய்வு மையம்,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி-622 403.

"பொன்னமராவதி வட்டார மக்களின் வாழ்வியல்" என்னும் தலைப்பில்
பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப்பகுதிக்கு செல்வி
கு.பவித்ரா பதிவு எண்: (**P 21100385**) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர்
கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச்
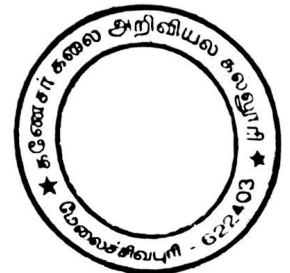செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம் : மேலைச்சிவபுரி
நாள் : 10 . 04 . 2023

நெறியாளர்
கணேசர் கலை அறிவியல கலலூரி
மேலைச்சிவபுரி.

முதல்வர்
முதல்வர்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

ஆய்வாளர் உறுதிமொழி

செ. அனுராதா

பதிவு எண்: P21100375

முதுகலை இரண்டாம் ஆண்டு

தமிழ் உயராய்வு மையம்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403

"முல்லைக்கலி - வாழ்வியலும் பண்பாடும்" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப் பாடப்பகுதிக்காகச் செய்யப்பட்ட இவ்வாய்வேடு என் சொந்த முயற்சியால் உருவானதாகும். இதற்கு முன்பு வேறு எந்தப் பட்டத்திற்கும் இவ்வாய்வேடு அளிக்கப்பெறவில்லை என்று உறுதி கூறுகிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: ௧0 |4| 2023

செ. அனுராதா

ஆய்வாளர்

நெறியாளர்

முனைவர். சி. குறிஞ்சி

எம்.ஏ., எம்.கூல்., பி.எட்., பி.எச்.டி.,

உதவிப்பேராசிரியர், தமிழ் உயராய்வு மையம்,

கணேசர் கலை அறிவியல் கல்லூரி,

மேலைச்சிவபுரி 622 403.

புதுக்கோட்டை மாவட்டம்.

முனைவர் சி. முடியரசன் எம்.ஏ.,எம்..'.பில்.,பி.எட்.,பிஎச்.டி.,

உதவிப் பேராசிரியர்

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி - 622 403.

      தமிழர் பண்பாட்டில் கார்த்திகைத் திருநாள் என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு செல்வி ப.மோகனப்பிரியா (பதிவு எண்: P21100384) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

நெறியாளர்

முனைவர் சி.பு.முடியரசன்

உதவிப் பேராசிரியா

தமிழ் உயராய்வு மையம்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி - 622403

இடம்: மேலைச்சிவபுரி

நாள்: 10. 04. 2023.

முதல்வர்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

முனைவர் வே.அ.பழனியப்பன் எம்.ஏ., எம்.ஃபில்., பி.எட்., பி.எச்டி.,
உதவிப்பேராசிரியர் & துறைத்தலைவர்,
தமிழ் உயராய்வு மையம்,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி — 622 403.

    "**திருமங்கையாழ்வார் பாசுரங்களில் வைணவ நெறி**" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு செல்வி. மொ. மோகனா (பதிவு எண்: P21100383) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரி தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 10-04-2023

<div align="right">
நெறியாளர்   10/04/2023

முனைவர் வே. அ. பழனியப்பன்,
தலைவர் – தமிழ்த்துறை,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி - 622 403,
புதுக்கோட்டை மாவட்டம்.
</div>

முதல்வர்

முதல்வர்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

முனைவர் சே.பிருந்தா, எம்.ஏ., பி.எச்டி
உதவிப்பேராசிரியர், தமிழ்த் துறை,
தமிழ் உயராய்வு மையம்,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி-622 403.

"சிலையெழுபதும் வன்னியர்களும்" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப்பகுதிக்கு **ப.கோமதி** பதிவு எண்: **(P 21100380)** செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரி தமிழ்த்துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.
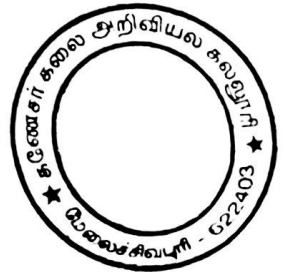
இடம் : மேலைச்சிவபுரி
நாள் : 10 - 04 - 2023

நெறியாளர்
முனைவர் சே.பிருந்தா,எம்.ஏ.,
உதவிப்பேராசிரியர்,தமிழ்த் துறை உயரா
கணேசர் கலை அறிவியல் கற்லூ...
மேலைச்சிவபுரி 622 403 புதுக்கோட்டை மாவட்டம்.

முதல்வர்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

கணேசர் கலை அறிவியல் கல்லூரி, மேலைச்சிவபுரி

தேர்வு மையம் எண்: 010

2022-2023 எம்.பில் திட்டக்கட்டுரைத் தலைப்புகள்

வ.எண்	மாணவர்கள் பெயர்	பதிவு எண்	கட்டுரைத் தலைப்பு	நெறியாளர் பெயர்
1.	பெ.அடைக்காத்தாள்	2K22FT-23380	சங்க இலக்கியத்தில் நிலவியல்	முனைவர் வே.அ.பழனியப்பன்
2.	இரா.அழகுலெட்சுமி	2K22FT-23381	மணிமேகலையில் கிளைக்கதைகளும் துணைக்கதைகளும்	முனைவர் பெரி.அழகம்மை
3.	க.முத்துலெட்சுமி	2K22FT-23382	சங்க இலக்கியத்தில் நீரியல்	முனைவர் கதி.முருகேசன்
4.	ரா.பெரியம்மாள்	2K22FT-23383	சங்க இலக்கியத்தில் தோழி கூற்றுகளில் அறம்	முனைவர் சி.முடியரசன்
5.	பி.போதுமணி	2K22FT-23384	நம்மாழ்வார் பாடல்களில் அகச்செய்திகள்	முனைவர் மா.தமிழ்ச்செல்வி

நெறியாளர் சான்றிதழ்

முனைவர் வே. அ. பழனியப்பன் எம். ஏ., எம். ஃபில்., பி. எட்., பிஎச். டி.,

முதல்வர் (பொ) & ஆய்வு நெறியாளர்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403.

      "சங்க இலக்கியத்தில் நிலத் தோற்றங்கள்" என்னும் தலைப்பில் மேலைச்சிவபுரி கணேசர் கலை அறிவியல் கல்லூரித் தமிழ் உயராய்வு மைய ஆய்வாளர் பெ. அடைக்காத்தாள் (பதிவு எண்: 2K22FT – 23380) அவர்கள் செய்துள்ள இளமுனைவர் பட்ட ஆய்வேடு என் நெறியாள்கையின் கீழ், அவர் ஆய்வு செய்த காலத்தில் தன்னியலாகச் செய்யப்பட்டதென்றும், இவ்வாய்வேடு மீது வேறெந்தப் பட்டமும் ஆய்வாளருக்கு அளிக்கப்படவில்லை என்றும் சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 29/11/2023

நெறியாளர்

முனைவர். வே. அ. பழனியப்பன்
உதவிப்பேராசிரியர் & நெறியாளர்
தமிழ் உயராய்வு மையம்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி – 622 403.

முதல்வர்
கணேசா கலை அறிவியல கல்லூரி
மேலைச்சிவபுரி.

முனைவர் வே. அ. பழனியப்பன்,
தலைவர் – தமிழ்த்துறை,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி – 622 403,
புதுக்கோட்டை மாவட்டம்.

Ganesar College of Arts and Science, PG Dept of Commerce
Project Details from 2022 -23

S.NO	NAME	TITLE|2022-2023|	GUIDE	REG.NO
1	M.DHIVYABHARATHI	USE OF MOBILE WALLETS AMONG THE YOUTH: A STUDY ON PRE AND POST COVID -19 SCENARIO	M.MOHAMED IBRAHIM MOOSA	P21110375
2	K.DURKADEVI	A STUDY ON CUSTOMER SATISFACTION TOWARDS GOOGLE PAY USERS IN PONNAMARAVATHY TALUK	S.MANJULA	P21110376
3	M.KAMALI	A STUDY ON CUSTOMER PERCEPTION ON TV ADVERTISEMENTS ON PRODUCTS RELATED TO FIGHT CORONA VIRUS	M.MOHAMED IBRAHIM MOOSA	P21110377
4	V.MUTHAIAH	A STUDY ON ONLINE SHOPPING AMONG HIGHER EDUCATION STUDENTS IN PUDUKKOTTAI DISTRICT	V.JANCY RANI	P21110378
5	N.MUTHUMEENA	A STUDY ON BRAND PREMISES AND PRODUCT REPURCHASES IN HEALTH DRINKS - PONNAMARAVATHY TOWN	C.BALAMURUGAN	P21110379
6	N.NANDHINI	A STUDY ON EMPLOYEES JOB SATISFACTION OF INDIAN BANKS AT PONNAMARAVATHY TALUK	K.LAKSHMANAN	P21110380
7	M.PONNALAGU	A STUDY ON TAX MANAGEMENT OF HIGHER SECONDARY SCHOOL TEACHERS WITH SPECIAL REFERENCE TO PONNAMARAVATHY BLOCK	A.DURAIPANDI	P21110381
8	M.RASIKA	CUSTOMERS PREFERENCES TOWARDS ON HIMALAYA FACE CREAM A STUDY WITH SPECIAL REFERENCE TO PONNAMARAVATHY TOWN	R.KALAISELVI	P21110382
9	A.SANTHIYA	A STUDY ON TEACHERS PERCEPTION ON ONLINE TEACHING PROBLEMS PROSPECTS WITH REFERENCE TO PUDUKKOTTAI DISTRICT	A.DURAIPANDI	P21110383
10	M.UMA	A STUDY ON CUSTOMER SATISFACTION IN REDMI MOBILE PHONE	C.BALAMURUGAN	P21110385
11	V.VAIRATHAL	A STUDY ON CONSUMER SATISFACTION TOWARDS TVS STAR CITY WITH SPECIAL REFERENCE TO PUDUKKOTTAI TOWN	R.SENTHILKUMAR	P21110386
12	M.VAISHNAVI	A STUDY ON THE PRODUCTION AND MARKETING OF JASMINE FLOWERS IN ALANGUDI TALUK AT PUDUKKOTTAI DISTRICT	R.SENTHILKUMAR	P21110387
13	S.VIJAYA LAKSHMI	A STUDY ON BRAND PREFERENCES OF SENSODYNE TOOTH PASTE IN PONNAMARAVATHY TOWN	S.MANJULA	P21110388

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PRINCIPAL
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USE OF MOBILE-WALLETS AMONG THE YOUTH: A STUDY ON PRE AND POST COVID-19 SCENARIO

A Project work Submitted to

Bharathidasan University, Thiruchirappalli

in partial fulfilment of the requirement for the Award of the Degree

MASTER OF COMMERCE
(2021-2023)

Researcher

M.DHIVYABHARATHI
Reg. No. P 2110375

Under the Guidance of

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DEPARTMENT OF COMMERCE

GANESAR COLLEGE OF ARTS AND SCIENCE

(Affiliated to Bharathidasan University, Tiruchirappalli
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APRIL- 2023

Prof. Dr. M. MOHAMED IBRAHIM MOOSA
M.Com., M.Phil., B.Ed., Ph.D., PGDCA., PGDCM.,
Head of the Department of Commerce

CERTIFICATE

This is to certify that the Project work titled **"USE OF MOBILE-WALLETS AMONG THE YOUTH: A STUDY ON PRE AND POST COVID-19 SCENARIO"** is the bonafide student of research work carried out by **M.DHIVYABHARATHI** **(Reg.No. P 21110375)** under the guidance and supervision of **Prof. Dr. M. MOHAMED IBRAHIM MOOSA** M.Com., M.Phil., B.Ed., Ph.D., PGDCA., PGDCM., Head of the Department of Commerce, Ganesar College of Arts and Science, Melaisivapuri, and submitted to the **Bharathidasan University, Tiruchirappalli,** for the partial fulfilment of requirement of the award of degree of **MASTER OF COMMERCE.**

Date: 12.04.2023
Place: Melaisivapuri

7/12/4/23

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MELAISIVAPURI - 622 403

"A STUDY ON CUSTOMER SATISFACTION TOWARDS GOOGLE PAY USERS IN PONNAMARAVATHI TALUK"

Project Report Submitted to the **BHARATHIDASAN UNIVERSITY**

In partial fulfillment of the requirement for the Award of the Degree of the

MASTER OF COMMERCE

Submitted By

K.DHURKADEVI

(Register Number: P21110376)

Under the guidance of

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Head of the Department of Bank Management

DEPARTMENT OF COMMERCE

GANESAR COLLEGE OF ARTS AND SCIENCE

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Melaisivapuri-622 403

Ponnamaravathy (Taluk)

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April-2023

S.MANJULA M.Com., M.Phil., PGDCA., PGDCM.,

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Ganesar College of Arts and Science,

Melaisivapuri - 622 403

Ponnamaravathy (Taluk)

Pudukkottai (District)

CERTIFICATE

This is to Certify that the dissertation entitle, "A STUDY ON CUSTOMER SATISFACTION TOWARDS GOOGLE PAY USERS IN PONNAMARAVATHI TALUK " by K.DHURKADEVI (Register Number: P21110376) in partial fulfillment of requirements for the award of the degree of Master of Commerce. This work has been carried out by her/his under my guidance and supervision.

Place: Melaisivapuri

Date: 12/04/2023

12/4/23

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A STUDY ON CUSTOMER PERCEPTION ON TV ADVERTISEMENTS ON PRODUCTS RELATED TO FIGHT CORONA VIRUS

A Project work Submitted to
Bharathidasan University, Thiruchirappalli
in partial fulfilment of the requirement for the Award of the Degree

MASTER OF COMMERCE
2021-2023

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GANESAR COLLEGE OF ARTS AND SCIENCE
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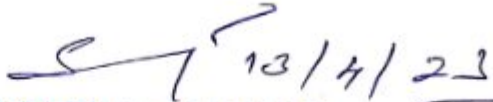**Melaisivapuri, 622403, TAMILNADU**

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A STUDY ON ONLINE SHOPPING AMONG HIGHER EDUCATION STUDENTS IN PUDUKKOTTAI DISTRICT

A Project work Submitted to
Bharathidasan University, Thiruchirappalli
in partial fulfilment of the requirement for the Award of the Degree of

MASTER OF COMMERCE

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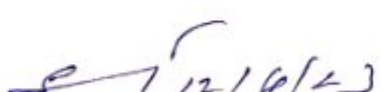**Assistant Professor of Commerce**

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A STUDY ON BRAND PREMISES AND PRODUCT REPURCHASE IN HEALTH DRINKS-PONNAMARAVATHI TOWN

A Project work Submitted to

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"A STUDY ON EMPLOYEES JOB SATISFACTION OF INDIAN BANK'S AT PONNAMARAVATHI TALUK"

Project Report Submitted to the **BHARATHIDASAN UNIVERSITY**

In partial fulfillment of the requirement for the Award of the Degree of

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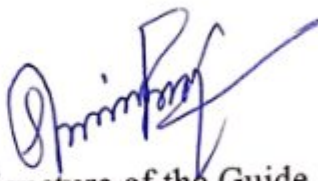
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"A STUDY ON TAX MANAGEMENT OF HIGHER SECONDARY SCHOOL TEACHERS WITH SPECIAL REFERENCE TO PONNAMARAVATHY BLOCK"

Project Report Submitted to Bharathidasan University in Partial Fulfillment of the Requirement for the Degree of

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2021 – 2023

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CUSTOMER PREFERENCES TOWARDS ON HIMALAYA FACE CREAM

("A STUDY WITH SPECIAL REFERANCE TO PONNAMARAVATHY TOWN")

Project Report Submitted to the **BHARATHIDASAN UNIVERSITY**

In partial fulfillment of the requirement for the Award of the Degree of the

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"A STUDY ON TEACHERS' PERCEPTION ON ONLINE TEACHING: PROBLEMS AND PROSPECTS WITH REFERENCE TO PUDUKKOTTAI DISTRICT"

Project Report Submitted to Bharathidasan University in Partial Fulfillment of the Requirement for the Degree of

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A STUDY ON CUSTOMERS SATISFACTION IN REDMI MOBILE PHONE

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"A STUDY ON CONSUMER SATISFACTION TOWARDS

TVS STARCITY WITH SPECIAL REFERENCE

TO PUDUKKOTTAI TOWN"

Project Report Submitted to the **BHARATHIDASAN UNIVERSITY**

In partial fulfillment of the requirement for the Award of the Degree of the

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"A STUDY ON THE PRODUCTION AND MARKETING OF JASMINE FLOWERS IN ALANGUDI TALUK AT PUDUKKOTTAI DISTRICT"

Project Report Submitted to the **BHARATHIDASAN UNIVERSITY**

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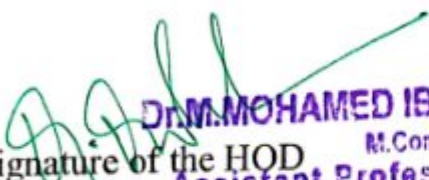
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A STUDY ON BRAND PREFERENCE OF SENSODYNE TOOTHPASTE IN PONNAMARAVATHI TOWN

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A STUDY ON BRAND PREMISES AND PRODUCT REPURCHASE IN HEALTH DRINKS-PONNAMARAVATHI TOWN

A Project work Submitted to

Bharathidasan University, Thiruchirappalli

in partial fulfilment of the requirement for the Award of the Degree

MASTER OF COMMERCE
2021-2023

Researcher

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APRIL- 2023

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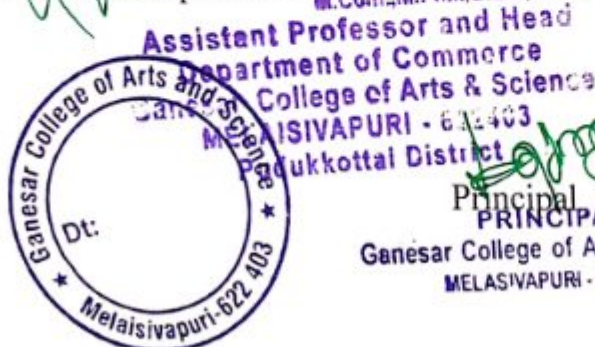
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CERTIFICATE

This is to certify that the Project work titled **"A STUDY ON BRAND PREMISES AND PRODUCT REPURCHASE IN HEALTH DRINKS-PONNAMARAVATHI TOWN"** is the bonafide student of research work carried out by **N.MUTHUMEENA** (Reg. No. P 21110379) under the guidance and supervision of **Mr. C.BALAMURUGAN, M.Com.,M.Phil.,B.Ed.,SET.,Ph.D.,** Assistant Professor, Department of Commerce, Ganesar College of Arts and Science, Melaisivapuri, and submitted to the **Bharathidasan University, Tiruchirappalli,** for the partial fulfilment of requirement of the award of degree of **MASTER OF COMMERCE.**

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DECLARATION

I, hereby declare that the project Report titled **"A STUDY ON BRAND PREMISES AND PRODUCT REPURCHASE IN HEALTH DRINKS-PONNAMARAVATHI TOWN"** submitted to the **Bharathidasan University, Tiruchirappalli,** in partial fulfilment of the requirements for the award of the Degree of **Master of Commerce** is a record of original research work done by me during the period 2022-2023 under the supervision and guidance of **Mr. C.BALAMURUGAN,** M.Com.,M.Phil.,B.Ed.,SET.,Ph.D., Assistant Professor, Department of Commerce, Ganesar College of Arts and Science, Melaisivapuri, and that it has not formed the basis for the award of any Degree/ Diploma/ Associateship/ Fellowship or other similar title to any candidate of any university.

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Date: 12-04-2023

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Signature of the Guide

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MUTHUMEENA.N

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CHAPTER I

INTRODUCTION

INTRODUCTION

Brand promise and the product repurchase intention has positive and significant relationship with brand loyalty. in this paradox of choice, Customers are attracted to companies not only based on what they deliver but also the purpose and valuesthey stand for. So good promise create trust and that leads brand loyalty which in turn brings to repurchase intention

The healthy drink market is one of the rapidly growing market sectors in India. Due to Increase in standard of living and changing lifestyle and high level of consumerism backed by raising income levels, growing vision of Indian consumers towards healthier foods and beverages by which Indian market become an emerging trend of food industry that made positive impact on health drinks market.

Health drinks in India are primarily malt-based milk drink that act as taste enhancer along with nutritional fortification of milk. Earlier known as malted food drinks, the category was introducing in India in 1950s launch of Horlicks and started strengthening its position in 1960s with success launch of operation flood. The current market for health food drinks can be clearly segmented by popular flavors-chocolate, plain malted and vanilla

Malt drinks, meanwhile, are most popular in India, which accounts for 22 % of the world retail volume sales. They are traditionally consumed as milk substitute andmarketed as a nutritional drink. More variety of taste and flavors, awareness building efforts by the MNC's, increased acceptability of health drinks product. Other factors of growth are better standard of living, increase health consciousness among affluent people and affordability of price. Malted beverages have always been positioned as regular health drink targeted at children and the elder population

India, the world's largest Malt base drink market, accounts for 22%of the world retail volume sales. The health food drinks category consist of brown drinks and white drinks, South and east India are largest market for these drinks, accounting for largest proportion of all India sales. The total market is placed at 90,000 ton and is expected to be growing at about 4%. These Malt Beverage, are still an urbanphenomenon. white drinks accounts for almost 2/3 of the market. GlaxoSmithKline consumer Healthcare is the market leader in the white market

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Kraft Heinz's complan comes in second position. Market leader GSK also owns other brands such as maltova,boost and viva. Currently, brown drinks continue to grow at the expense of the white drinks like Horlicks and complan

Major players in the market

- Horlicks

- Complaint

- Boost

- Cadbury's Bon vita

STATEMENT OF THE PROBLEM

The rapid rise in digitalization has put consumers in the driver's seat and they are power full now. The aim of market is not only meet and satisfy consumers needs and wants but also tries to create trust and make them loyal, but knowing consumeris difficult. Consumers are also varying with their income, age, sex or other characteristics. Two competitive brands of health drinks are considered in this study. They are Horlicks and boost. This research work has been carried out to know the brand promise and product repurchase intention of customers about thesetwo health drinks.

SCOPE OF THE STUDY

The study helps to know brand promise and product repurchase intention of consumers towards selected health drinks. It also records people choice or preference among various health drinks and also the relationship between incomelevel and consumption level. This study attempts to analyze the product repurchase intention criteria over health drinks. It may affect by the price, quality, packaging, promotional factors and service provided by the company

SIGNIFICANTS OF THE STUDY

In this dynamic and competing world, everyone wants to make profit but it is not so easy now. In this era customers facing a constant influx of information and choice, so a clear sense of what a company stands for, the values, believes and approaches can be a crucial point of differentiation which ultimately leads to customer loyalty. So, the ultimate aim is to study the factors attracting consumersto prefer a brand among various health drinks and examine the effect of brand promise on brand repurchase intention.

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OBJECTIVE OF THE STUDY

- To study factors attracting consumers to prefer a brand among health drinks
- To examine the effect of customer satisfaction and brand preference on repurchase intention

HYPOTHESIS OF THE STUDY

- H 1: Brand preference among male and female health drinks users are different
- H 2: There is significant effect of brand promise on re purchase intention among male and female

RESEARCH METHODOLOGY

DATA COLLECTION

Primary data were collected from respondents through systematically prepared questionnaire in google forms then summarized electronically through SPSS.

RESEARCH DESIGN

Descriptive research has been undertaken in this research for finding effective result. The major purpose of this study is to find out the brand preference among female and male health drink users and to analyze the significant effect of brand promise on repurchase intention among male and female users.

SAMPLE DESIGN

It was very difficult to collect data from the entire population. So representative sample was drawn for the purpose of study.

SAMPLE POPULATION

Samples were selected from three schools in Pudukkottai sub district using convenient sampling method. First school is the Government girls higher secondary school Ponnamaravathy, which is a government school. Second one is Amalaannai Matriculation Schoo, Ponnamaravathi, which is a private school. Third school is Chidambaram matriculation Hr.Sec.School, which is a private school.

SAMPLE FRAME

School what's app is taken to be the sample frame for collection of data.

SAMPLE TECHNIQUE

Due to covid 19, the researcher was unable to collect data directly. Therefor data were collected through google forms, forwards in class what's app groups.

SAMPLE SIZE

Here 159 respondents were filled the google form during the period of data collection, hence the researcher constitute the sample size to 159.

TOOL USED FOR ANALYSIS

Appropriate statistical tools were used for analysis via descriptive and inferentialtools.

- Percentage analysis

- Chi square test

- Man- Whitney test

LIMITATIONS

- The study is limited to number of respondents and the period of study is also limited

- The present study is also conducted on the basis of secondary data. Hence,the study would be affected the limitation of secondary data

- As study is based on primary and data collected through the questionnaire filled on the basis of information supplied by respondents. There is possibility that the information may not be true in some cases.

- Incomplete information supplied by respondents in some case become another important obstacle in the way of proper analysis of the data.

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CHAPTERIZATION

- Chapter 1: Introduction

- Chapter 2: Review of literature

- Chapter 3: Theoretical framework

- Chapter 4: Data analysis and interpretation

- Chapter 6: Findings, suggestions and conclusion

CHAPTER II

REVIEW OF LITERATURE

EMPIRICAL REVIEW

Dr K.K Dave, Rachna Paliwal (2016) found out that bourn vita is having highest market share among all brands available. It is mostly consumed by the age group between 10 to 20 years. The aim of the research was to know the awareness and availability of brands of malted health food drinks in Udaipur and to study preference of malted health food drinks between all the age group with brand characteristics and with other similar substitute of health food drinks and to study buyer's perception in relevance with 5 p's of marketing. The statical tool used are percentage method and chi-square.

Dr P Sekar, S Thangavel (2016) found that majority 60% of the respondents are in the age group of 41 and above 40% of respondents were aware through advertisement. 68% of the respondents said that the reason behind choosing the brand is taste. The study was conducted to light which brand of health drink is mostly preferred by the consumers and why they choose a particular drink. For this purpose, data was collected from rural areas of Coimbatore district. As the population for the research work in the study area is numerous. The statistical tool used are percentage analysis and chi square.

Ricardo (2008) concluded that color and shapes, important element of marketing strategy and both are essential features of product packaging and design communication message.

Kriti Bardhan Guptha (2009) emphasized on factors affecting purchase decision major categories of food product. The study concluded that consumer behavior for food product in different perspective cleanliness of the product, freshness, good for health and clean place of sale gives important attributes values for money, overall quality and good display of products nearby availability are important parameters.

Jacoby and Chestnut (1978) Brand loyalty is a function of psychological processes. Brands are chosen according to internal criteria resulting in a consignment towards the brand, which is an essential element of brand loyalty. This point of view is in line with the information processing paradigm, which is the dominant point of view in consumer behavior.

Hoyer (1984) concluded that inert consumers have different motives; different decision rules and requires other marketing action than brand loyal consumers. In particular, they

do not evaluate a large set of alternatives but use simple decisionsheuristics like "always buys the cheapest brand" or "always buys the same brand"

Shelina Visram, Stephen J. Crossley, Mandy Chatham, Amelia Lake (2017): aimed forchildren and young people below the age of 20, perception and attitudestowards health drinks in U.K. Children from schools were taken in England. Data analyzed using constant comparative approach. Their findings seek to change the behavior and many as well as in consumers.

Dongmun Ha,Inmyung song,Gyeongil Jang, Eui- kyung Lee,Ju-young Shin (2017): designed at the use of highly other additives.The study is conducted among 833 Korean adolescents, and has responded to the Questionnaire. The study is about the benefit and about the risk involved in it.

Danadip G. Prajapati (2017) has found that television advertisements have increased the consumption levels for Health drinks and have taken from 200 samples in Vadodara city, The concludes that children are addicted to it more.

Wiggers D Ried JL White CM,Hammond(2017) has analyzed the usage of energy drinks by the customers. The study was conducted 12-24 years age group.chi square and Anova Was used in the study. Identified that the consumption of health Drinks has gone high.

Sara M. Seifert, Judith L, Schaechter, Eugene R Hershorin Steven E Lipshultz (2016) has taken a survey of the impacts results, degree of energy drinks utilization by adolescents. An investigation of 1265 young people were taken. The author concluded saying that regulations of health drink deal and utilization levels in clients ought to be founded on proper research.

Subin Park, Yeeun Lee, Jung Hyun H.Lee (2016) aimed investigated energy drink intake and mental health problems among Korean adolescents. A sample of68,043 aged 12-18 years, data was collected from 2015, Korean youth riskbehavior web-based survey were analyzed. Their data suggest that, it has effects related to stress, isolation etc.

Dr.K.K Dave, Rachna Paliwal (2016) identified that Malted health food drink isamong best substitute of a complete food according to their study, 400 respondents were interviewed from Udaipur city. The researcher used Kruskal Wallis test usingSPSS were used to interpret the results. The study shows that mostly are preferred through advertisements.

Farouk El Sabban (2016) founded that manufacturers and Advertising Strategies are targeting teenagers for the consumption of health drinks. consumption of healthdrinks has gone high in among the school children. concluded that a great societal effort should be carried on to know adverse effects.

Ahmed Abdul Alsunni (2015) has identified that energy drinks boost to improve cognitive and physical performances in children.

CONCEPTUAL FRAMEWORK

Market

The term market means an area where you will buy and sold. It's an area where buyers and sellers gather to exchange goods and services. Market may be place, where people with money to spend and desire to spend it.

A market is defined because the sum total of all the buyers and sellers in the area or region into account. The thought could also be the world or countries regions states or cities. The values, cost and price of item traded are as per forces of supply and demand within the market. The market could also be a physical entity or evenvirtual. It's going to be local or global, perfect or imperfect.

Marketing

It comprises of all activities performed by firms to direct and facilitate flow of products and services from producers to buyers. It is a two-way exchange process during which needs and wants of both buyers and sellers are satisfied. It's the exchange useful between buyer and seller.

Product

A product is that the item offered sale. A product is often a service or an item. It may be tangible or intangible form. Every product is formed at the value and every is sold at a price. The worth which will be charged depends on the market, the standard of marketing and therefor the segment that is targeted.

Consumer

Consumer are purchaser of product and services for immediate use and consumption. consumers are people who consume or use a product. Thus, consumer is an foremost user of a product.

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Consumer behavior

Behavior simply refers to doing of anything. consumer behavior is a study of whypeople buy. It is the behavior of the consumer at the time of buying or using goodsor services. Consumer behavior is a process whereby individuals decide what, when, were, how and from whom to purchase goods and services. Does consumerbehavior is the study of how people buy, what they buy, when they buy, and why they buy products or services. Consumer behavior means the method on how consumers make their purchase decision to satisfy their needs.

Buying motive

A sale is formed within the minds of a buyer, but not within the minds of a salesman. An individual does not simply purchase. A buyer is induced to buy a product by some reason. He takes a choice to buy only when an inner feeling or urge arouses interest in him to buy a commodity or enjoy a service at a price. Thus, buying motive is a strong feeling instinct desire or emotion that make them to buya product.

Customer satisfaction

customer satisfaction may be measurement used to quantify the degree to which a customer is proud with a product, service or experience. If you don't measure customer satisfaction you can't identify unsatisfied customers you can't analyze their feedback, make changes to our products or services to make them happy. customer is very important. if they are unsatisfied with the product, they will not purchase it. In this highly competitive marketplace, business compete for customers. customer satisfaction is seen as a key factor and increasingly has become a key element of business strategy.

A customer's expectation about a product tells us how he or she anticipates how that product will perform. It is considered that customer judge products on a limited set of norms and attributes.

Customer satisfaction factors

- Convenience: It is an important element of a positive customer experience. Its influence how customer make decision about what to buy what service to use where to go and with whom to engage.

- Accessibility: You need to ensure that customers are able to find and access your product and service efficiently without barriers and frictions on their preferred

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- channel.
- Choice: The more choices you give your customers during the buying process the more likely they are feeling in control of the experience that they have with your brand.
- Community: Today customers are research about everything before they make a purchase. it's important to consider the community exist around your brand. The best solution to create your brand reputation is to make sure thatyou engage with your community whenever possible. Even when someone has something bad to say about your business, learn how to respond from apositive perspective by offering a solution to problem.

Brand

Brand means a product, service or concept that is publicly different from other products, service or concept. So, it can be easily presented and marketed. Branding is a process that create an identity to a product or service.

By using trademarks, brands are protected from the use of others. Trademark can be accessed from an authorized agency, usually a government agency. Brands areexpressed in the form of logos.

Brand loyalty

Brant loyalty occurs when a consumer buys product or service repeatedly overtimerather than buying from multiple suppliers within the same category. Therefore, brand loyal customers are important source of value for companies.

Brand promise

Brand promise is a statement, that made by an organization to its consumers stating what they can expect from organizations products and services. This is related with the benefits and experience that they can enjoy from the use of the product or service. It represents the uniqueness of the brand. These promises are presented through advertisements and other marketing campaigns. It helps to establish brand equity and improve brand image. If it delivered efficiently to customers, can lead to long term customer loyalty and benefits.

- The brand promise should be simple
- The brand promise should be credible

- The brand promise should be varying

- The brand promise should be memorable

- The brand promise should be inspiring

Repurchase intention

Repurchase intention indicates a person's willingness to make another purchase from an equivalent firm and the reason for the purchase is the past experiences. Inshort customer statement about the intention to purchase again from the same seller. It is connected with Factors such as service quality, equity and values, customer satisfaction, past loyalty, expected switching cost and brand preferences.

CHAPTER-III

THEORATICAL FRAMEWORK

INDUSRY PROFILE

Universally, in mentioning their children, mothers attach tons of emotional importance to nourishment. There is an ever-growing need for nourishment and energy in today's fast paced world. Who can resist a steaming, hot drink which promises to energize, nourish and refresh? The need for nutritional supplementation is all the more relevant for kids. Coupled with fact that kids lovedelicious taste of these drinks, once they have tried them, lies the basic tale of milk addictive and grown and development of health food drinks category. No one canbe sure of when and how the category evolved buy, today, in India the HFD marketis valued at approximately RS 13000 million and 50000 tones.

The malted health drink market is one of the rapidly growing dynamic market in food service sector in India. Due to increase standard of living and changing lifestyle, growing inclination of Indian consumers towards healthier food and beverages by which Indian market become an emerging trend of food industry thatmake positive impact on malted health drinks. The various malted health drinks products are Horlicks, boost, complan, bourn vita, etc.

The report gives a detailed segmental analysis with the value for the malted healthdrinks market in India. According to India malted health drinks overview; Indian malted market is expected to grow with a CAGR of 17.4% for next six years, owingto urbanization and increased income of people. South India has the most important market share in malted health drinks, followed by east and north. The malted health drink market divided into white and brown powder, which means without cocoa powder and with cocoa powder consising Barley or corn malt. Nowadays manufacturing have range of brands placing separate to kids, adults andthe entire family.

Understanding the inner strength is crucial to the wellbeing of any person. Consumers seek malted drinks which will help to manage healthiness for day-to- day challenging life. Manufacturers are trying to combine the best raw material with innovative product concept. The manufacturers are bringing new package trends, which will attract the consumers to buy it. Thus, Indian consumers moving towards suitable and healthier lifestyle thus making the malted health drinks as a crucial category in food and beverage industry.

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COMPANY PROFILE 1. Horlicks

Horlicks involves India with British army, some malted barley, pinches flour with a clash of milk is the Horlicks recipe for success. James Horlicks, after whom the brand is known as, was a chemist who worked for a corporation which produces dried infant food. He became ambitious after inventing some recipe of his own. So, along with his brother William, they found **J&W** Horlicks of Chicago.

Until 1960's Horlicks was positioned as an adult restorative drink that gave extra energy especially during convalescence. In 1970's saw its position shift to "The general nutritionary." It had been during this phase that brand saliency shot up. Subsequent decade saw Horlicks face an immense external challenge. By 1994, its had create ideal Horlicks and improve product formulation that also brought back the trust of people. In 2002, Horlicks was re launched.

Horlicks features a significant presence in over fifteen countries. Today Horlicks is that the best-known brand in the health food category in India. The brand enjoys the trust of generations of Indian mothers and this relationship has been nurtures by the brand by fortifying the production from time to time. Junior Horlicks was re launched with extra nutrients to build the immunity of little kids. Today Junior Horlicks contribute 11% to Horlicks total sales turnover and has one of the fastest growing product extensions to the Horlicks brand.

But it isn't just a product development that Horlicks has concentrated upon, it has also created new attractive packaging option including jars, refill pack option and also the first to shrink wrap bottles. In a way, there's a Horlicks pack for every occasion and mood.

Brand value: Horlicks has always been a brand that stands for good health and nourishment through a whole some natural product. A commitment towards product quality and reinforcement of essential nutrients has won over the trust of generation on of mothers. Family bond is at the heart of Horlicks brand value.

Facts:

- Horlicks was first invented to substitute milk as baby food
- In India, 2 billion cups of Horlicks drunk every year.
- People on special diet, including liquid diet devised for gastric disorder, can benefit from the nutritional convenience of Horlicks.

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2. Boost

Boost was developed by the company's R&D team in 1974 and launched in Kerala in 1975/76 positioned as the "energy food" the brand soon generated greatconsumer,pull and was subsequently launched at a national level.

Around 1984, however boost sales appeared to plateau. This led to an entire rethink about the brand strategy. A deeper understanding of purchase dynamics of the category revealed that by the latter half of the 1980's, children had come to becomestrong influence during a family's purchase of MFD products. What was also observed was that this section of the population has the highest requirements for supplementary energy and was the foremost enthusiastic about sports cricket in particular.

Infused with this insight, boost was consequently repositioned. It pushed forward the association of youngsters of this age bracket with cricket. This has since remained a winning strategy. Today "Boost is the secret of my energy" is the mostrecalled sign off in its product segment and has defined brand's identity.

Boost is that the first HFD to possess ever used celebrity endorsement to convey its propositions and has successfully carved out the energy HFD market in India. In recognition of these achievements, boost has won prestigious award like the world star for packaging and the finalist position in Effic award 2000, fir effectivecommunication.

Brand value: The personality of the boost brand is distinctly sporty and energetic and everything from the tone of communication to packaging is completed to reflect thus vibrant energy. Today the color red and "boost is the secret of my energy" have become synonymous with the brand.

CHPATER IV

DATA ANALYSIS AND INTERPRETATION

4.1 Descriptive Statistical Analysis

The collected data was processed and analyzed within the time bounded of the research plan.

The data collected from 159 samples are analyzed carefully and interpretations are made accordingly. Diagrams such as pie chart and bar charts are used for this purpose.

Table 4.1
Classification of students on the basis of their classes

Class	No. of respondents	Percentage
5th	15	9.43
6th	24	15.09
7th	32	20.13
8th	27	16.98
9th	18	11.32
10th	43	27.04
Total	159	100

Source: primary data

Table no. 4.1 reveals the classification of students on the basis of their classes. Among 159 sample, 9.43% students are studied in 5th standard, 15.09% students are in 6th standard, 20.13% students are in 7th standard, 16.98% students are in 8th standard, 11.32% students are in 9th standard and 27.04% students are in 10th standard.

Figure 4.1
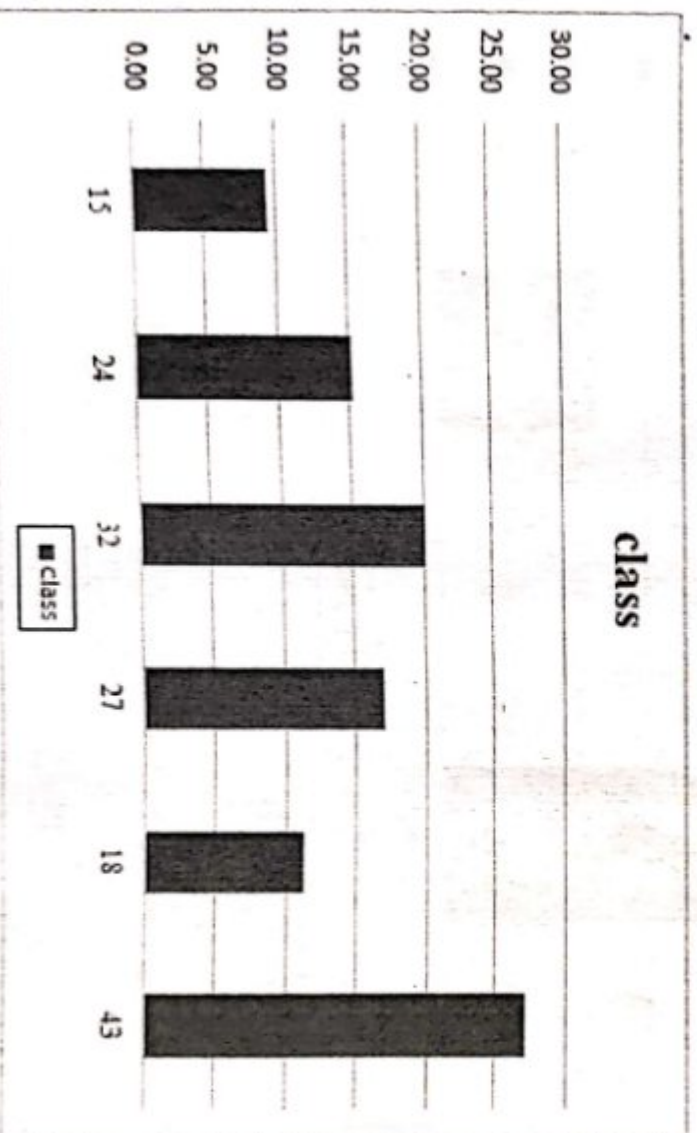
Table 4.2

Classification of students on the basis of gender

Gender	No. of respondents	Percentage
Male	74	46.54
Female	85	53.46
Total	159	100

Source: primary data

Table No. 4.2 reveals the classification of students on the basis of gender. Among 159 samples, 46.54% of students are male and 53.46% students are females.

Figure 4.2
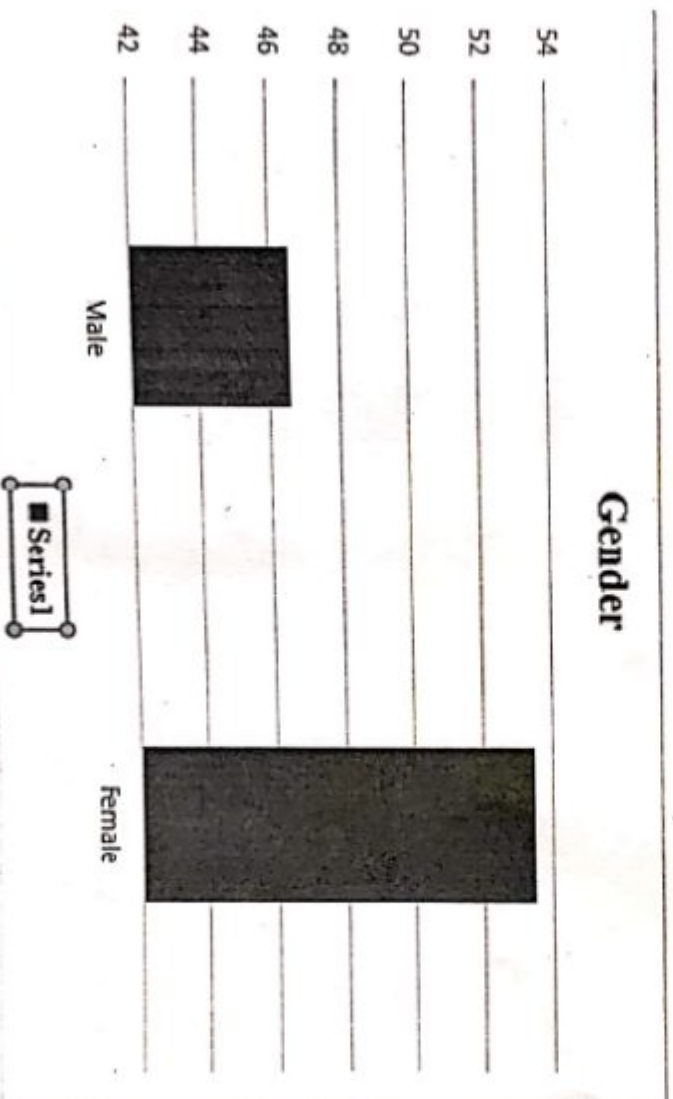
Table 4.3

Showing the name of the institution of students

Name of the institution	No. of respondents	Percentage
Govt.Girls Hr.Sec.School Ponnamaravathi	48	30.18
Govt.Girls Hr.Sec.School Ponnamaravathi	55	34.6
Chidambaram Matriculation Hr.Sec. School Ponnamaravthi	56	35.22
Total	159	100

Source: primary data

Table No. 4.3 reveals the name of the institution of student among 159 samples, 30.18% students are from girls higher secondary school, 34.6% students are from Amala annai higher secondary school and 35.22% of students are from Chidambaram Hr.Sec. School Ponnamaravathi.

Figure 4.3

- Govt.Girls Hr.Sec.School Ponnamaravathi
- Amala Annai Matric.Hr.Sec. School Ponnamaravathi
- Chidambaram Matriculation Hr.Sec. School Ponnamaravthi
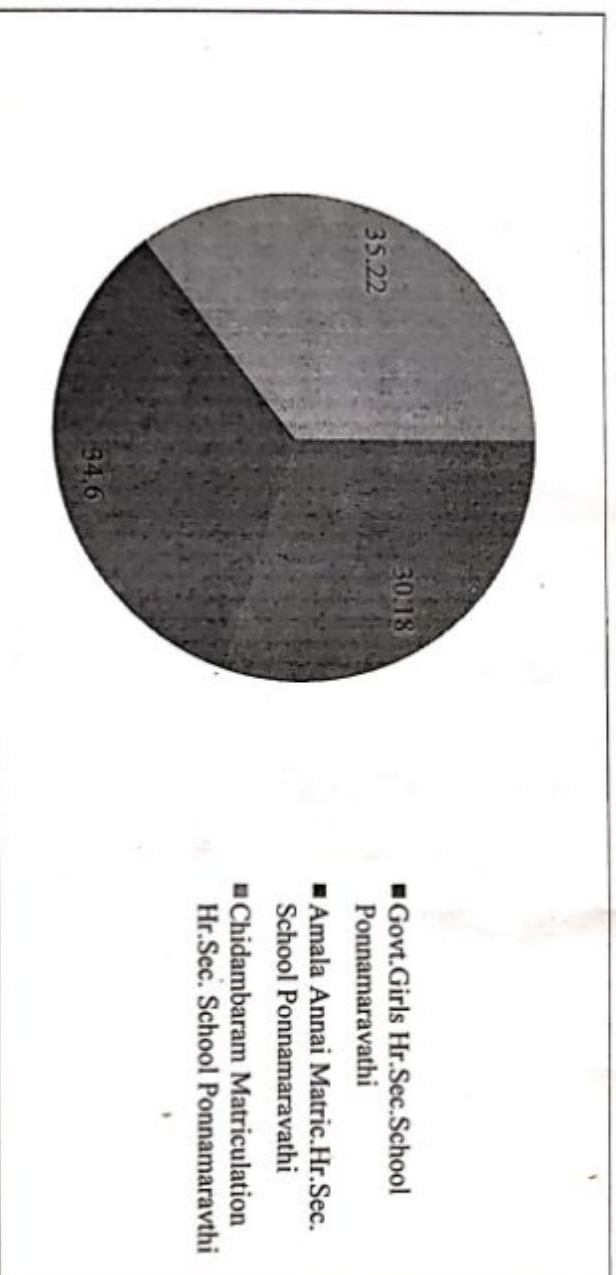
Table 4.4

Showing the level of study of students

Level of study	No. of respondents	Percentage
Upper primary	71	44.65
High school	88	55.35
Total	159	100

Source: primary data

Table No. 4.4 reveals the level of study of students. Among 159 sample, 44.65% students are upper primary and 55.35%are high school students.

Figure 4.4

Level of study

- Upper primary ■ High school

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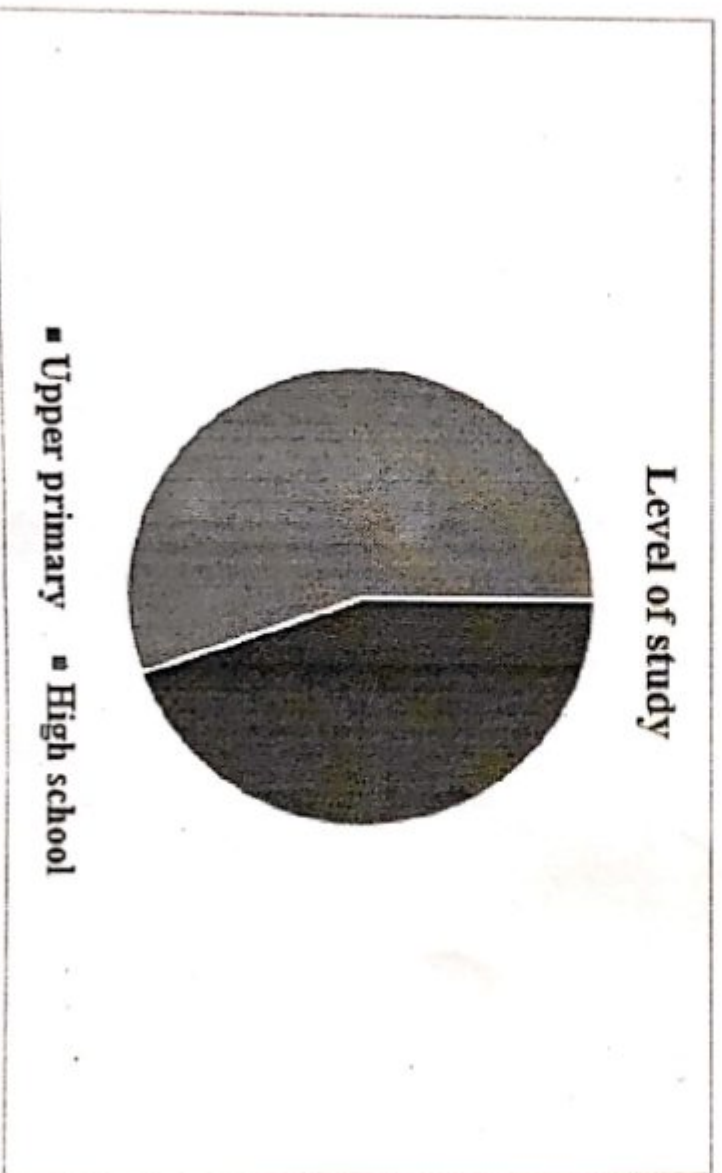
Table 4.5

Showing the type of family of students

Type of family	No. of respondents	Percentage
Nuclear family	129	81.13
Joint family	30	18.87
Total	159	100

Source: primary data

Table no. 4.5 reveals the type of family. Among 159 samples, 81.13% students are from nuclear family and 18.87% students are from joint family.

Figure 4.5

Types of family

■ Nuclear family   ■ Joint family
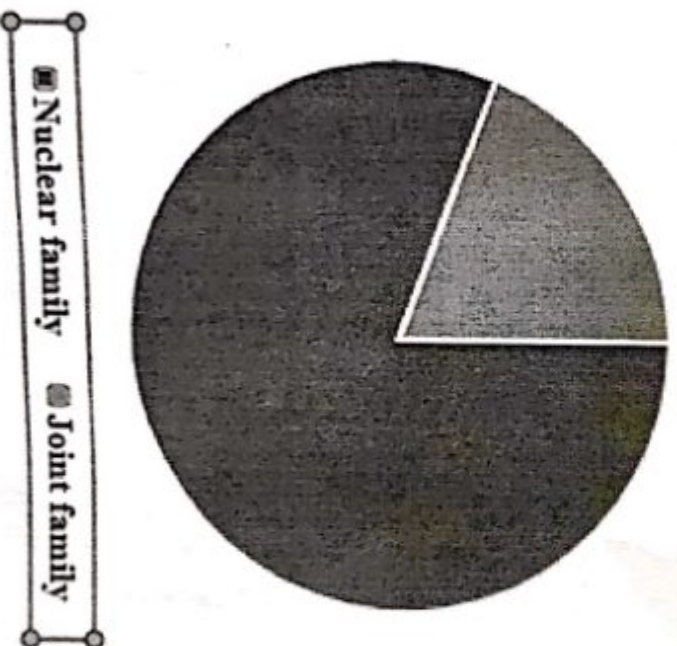
Table 4.6

Showing the parents occupation of the respondents.

Occupation of parents	No. of respondents	Percentage
Government employee	15	9.43
Private employee	76	47.80
Self employed	59	37.11
Service	9	5.66
Total	159	100

Source: primary data

Table No. 4.6 reveals that most of the students' parents are private employees. They constitute about 47.80%. 37.11% are self-employed, 9.43% are government employees and 5.66% are service oriented employees.

Figure 4.6

Occupation of parents
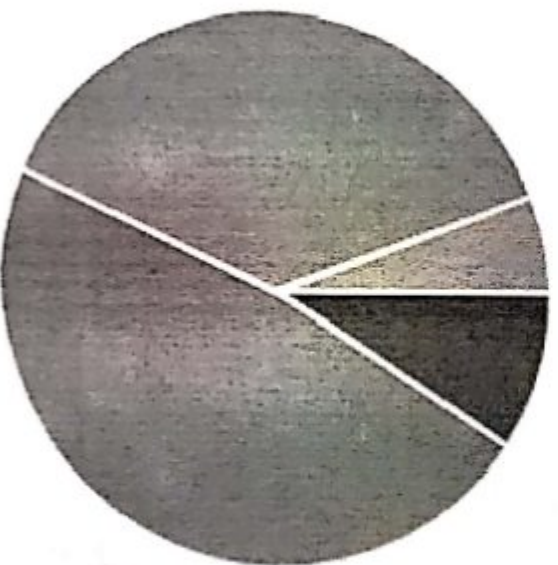
■ Government employee ● Private employee ■ Self employed ● Service

Table 4.7

Showing the monthly income of the family

Monthly income	No. of respondents	Percentage
Below 20000	109	68.55
20000 to 60000	39	24.53
Above 60000	11	6.92
Total	159	100

Source: primary data

Table no. 4.7 reveals that the monthly income level of the student's family. Among 159 sample, 68.55% families are earning below 20000. 24.53% student's family earn 20000 to 60000 and 6.92% student's family earn above 60000.

Monthly income

Figure 4.7
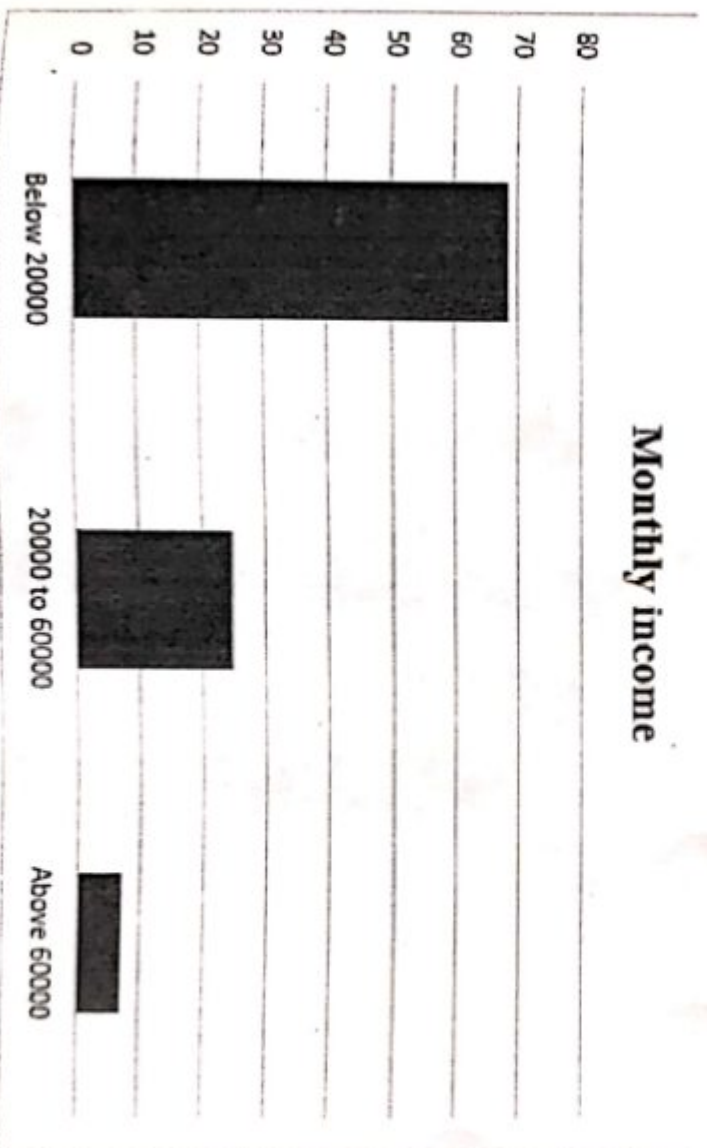
Table 4.8

Showing the awareness of health drinks among students.

Awareness	No. of respondents	Percentage
Yes	122	76.73
No	8	5.03
Maybe	28	18.24
Total	159	100

Source: primary data

Table 4.8 reveals that 76.73% of students are aware about the benefits and uses of health drinks. 18.24% students are not well known about health drinks. But it is clear that 5.03% students are not much aware about any health drinks which are available in our markets.

Awareness

■ Yes ■ No ■ Maybe

Figure 4.8
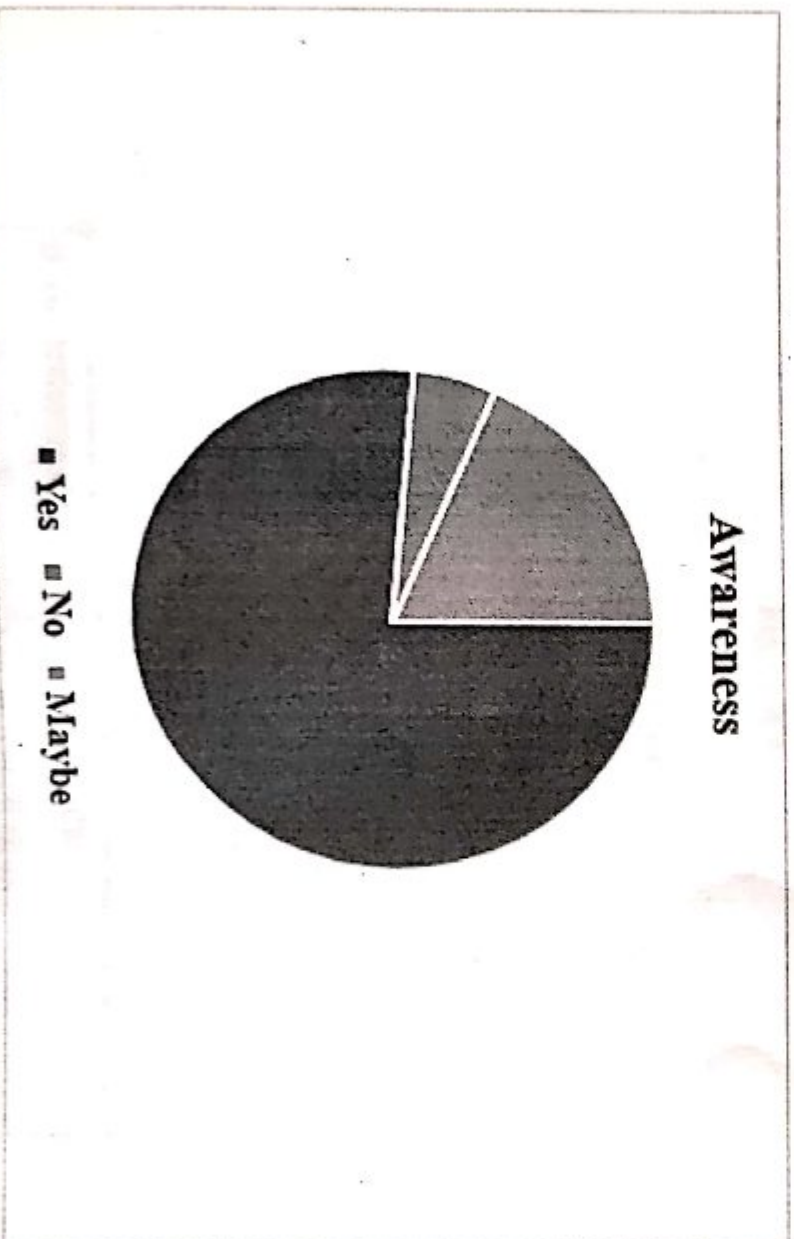
Table 4.9

Showing the source at which respondents get information about health drinks.

Source	No of respondents	Percentage
Advertisements	77	48.43
Friends	22	13.84
Family members/relatives	43	27.04
Retail shops	3	1.89
Doctors advise	14	8.80
Total	159	100

Source: primary data

Table 4.9 reveals the source at which consumers got information about the health drink. From this table we can clear that 48.43% of students are aware about health drinks through advertisement. Among 159 samples, 13.84% of students are aware about health drinks through friends, 27.04% are aware through family members, 1.89% are aware through retailors and 8.80% are aware through doctors.

Source

Figure 4.9

Legend:
- Advertisements
- Friends
- Family members/relatives
- Retail shops
- Doctors advise
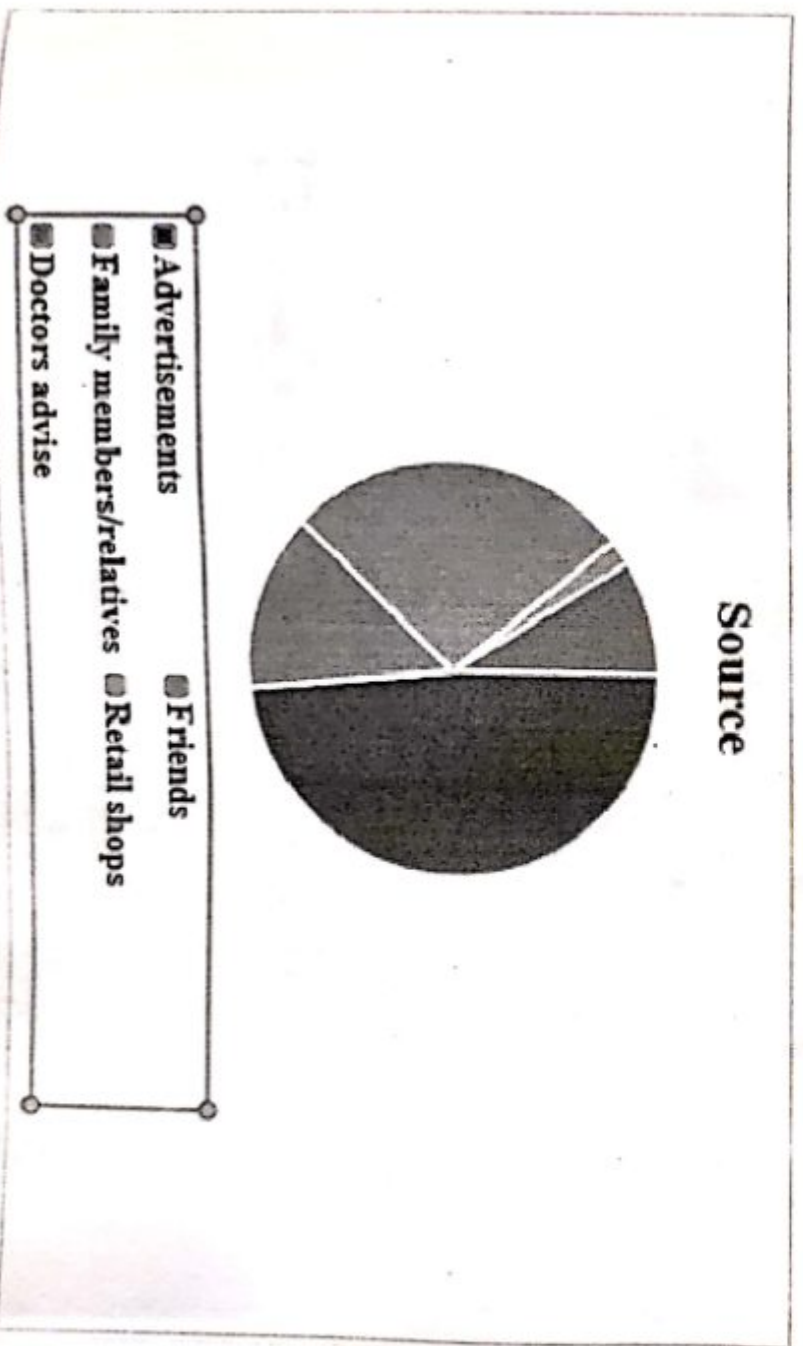
Table 4.10

Showing the media, which mostly influence students to buy health drinks.

Influencing media	No. of respondents	Percentage
Television	118	74.21
Newspaper	10	6.30
Internet	27	16.98
Posters	1	0.63
Banners	3	1.88
Total	159	100

Source: primary data

Table No. 4.10 reveals the media which mostly influence students to buy health drinks. Among 159 samples, 74.21% students are influenced by television,16.98% students are influenced by internet, 6.30% of students are influenced by newspaper, 1.88% students are influenced by banners and .63% students are influenced by posters.

Figure 4.10

Influencing media

■Television ■Newspaper ■Internet ■Posters ■Banners
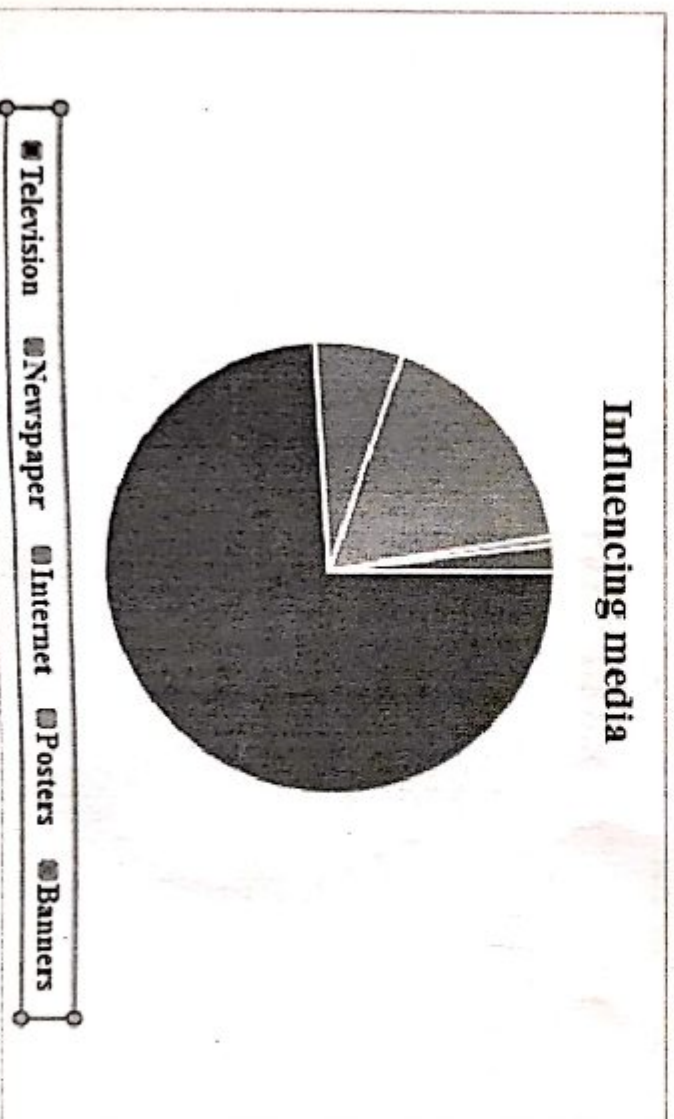
Table 4.11

Showing the importance of brand name while purchasing health drinks

Brand name	No. of respondents	Percentage
Yes	101	63.52
No	22	13.84
Maybe	36	22.64
Total	159	100

Source: primary data

Table 4.11 reveals that the importance of brand name while purchasing health drinks. Among 159 samples, 63.52% of students give importance to brand name and 22.64% of students not give too much importance to brand name and 13.84% students are not considering brand name.

Figure 4.11

■Yes ■No ■Maybe

Brand name
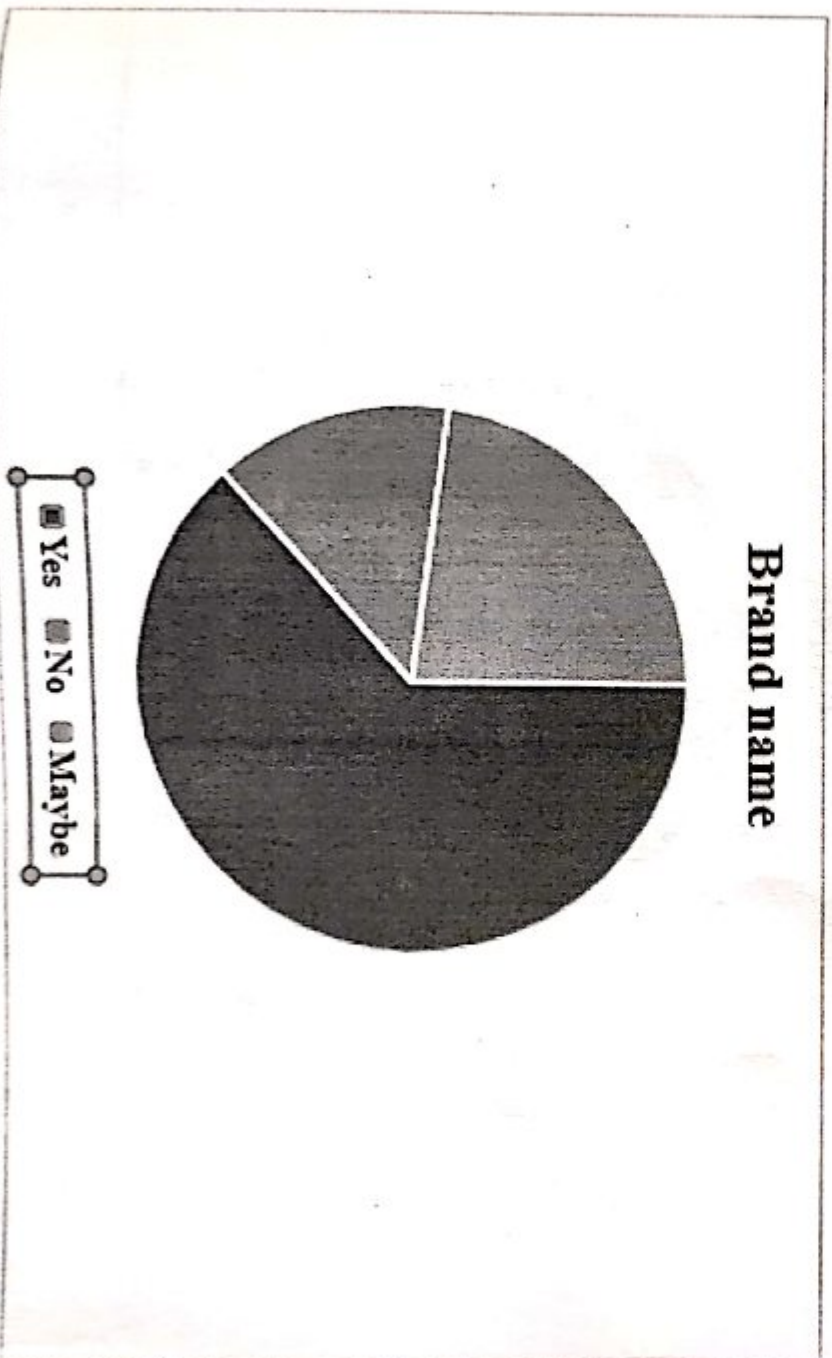
Table 4.12

Showing the brand preference of health drinks among students

Brand	No. of respondents	Percentage
Horlicks	58	36.48
Boost	101	63.52
Total	159	100

Source: primary data

Table 4.12 reveals the brand preference of health drinks among students. Among 159 samples, most proffered brand is Boost, which constitute 63.52% students. Next comes Horlicks which constitute 36.48% students.

Brand

◼Horlicks ◼Boost

Figure 4.12
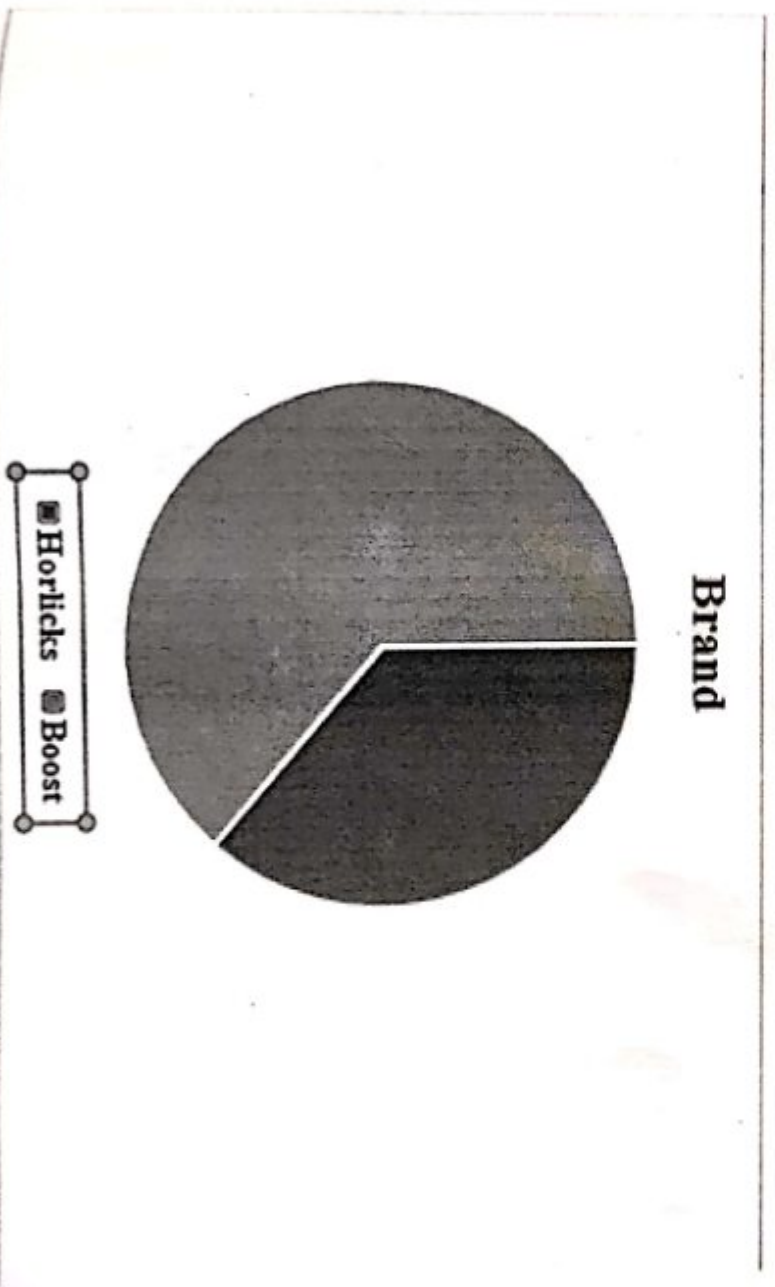
Table 4.13

Showing the presence of a celebrity help students to recognize a brand

Particulars	No. of respondents	Percentage
Yes	62	38.99
No	68	42.77
Maybe	29	18.24
Total	159	100

Source: primary data

Table 4.13 reveals that the presence of a celebrity help students to recognize a brand. Among 159 sample, 38.99% students reveals that the presence of a celebrity help them to recognize a brand. But 42.77% students are reveals that the presence of a celebrity should not help them to recognize their brand. 18.24% students reveals that the presence of a celebrity may or may not help them to recognize their brand.

Figure 4.13

Presence of a celebrity

■ Yes ■ No ■ Maybe
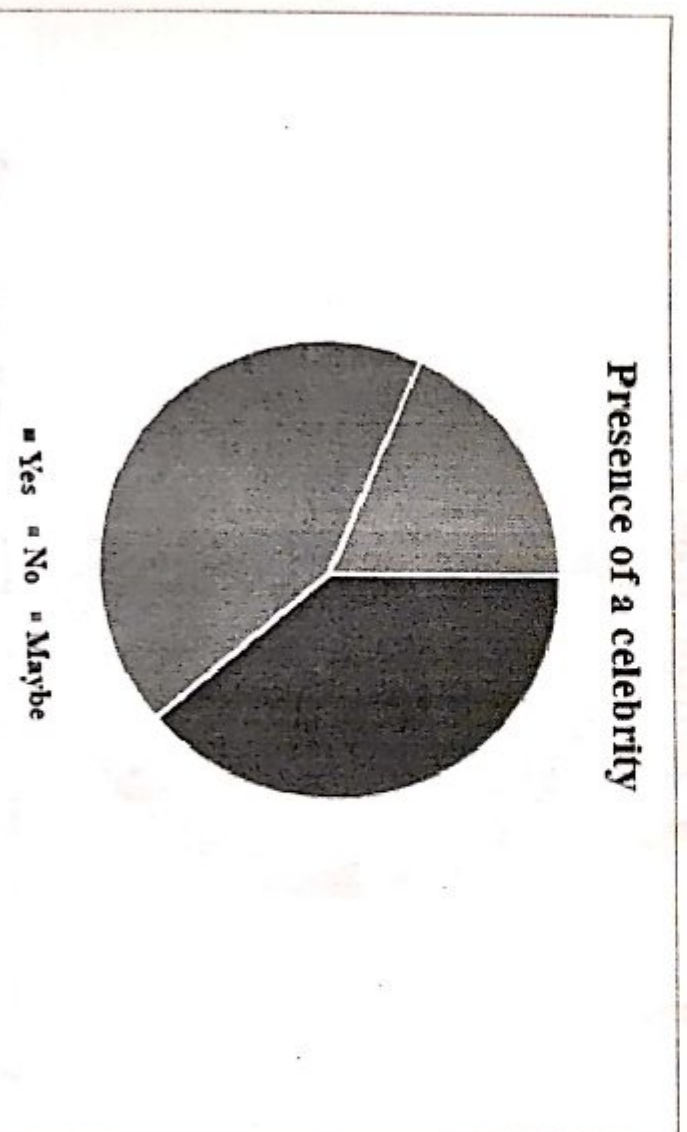
Table 4.14

Showing average quantity of health drinks consumed per month by students.

Consumption	No. of respondents	Percentage
Below 500 gm	104	65.41
500gm to 1Kg	47	29.56
Above 1Kg	8	5.03
Total	159	100

Source: primary data

Table No. 4.14 reveals that the average quantity of health drinks consumed per month by students. Among 159 samples, 65.41% of students are consuming below 500 gm per month. 29.56% of students are consuming 500 gm to 1 kg. Only 5.03% students are consuming health drinks above 1 kg.

Figure 4.14

Below 500 gm   500gm to 1Kg   Above 1Kg

Consumption
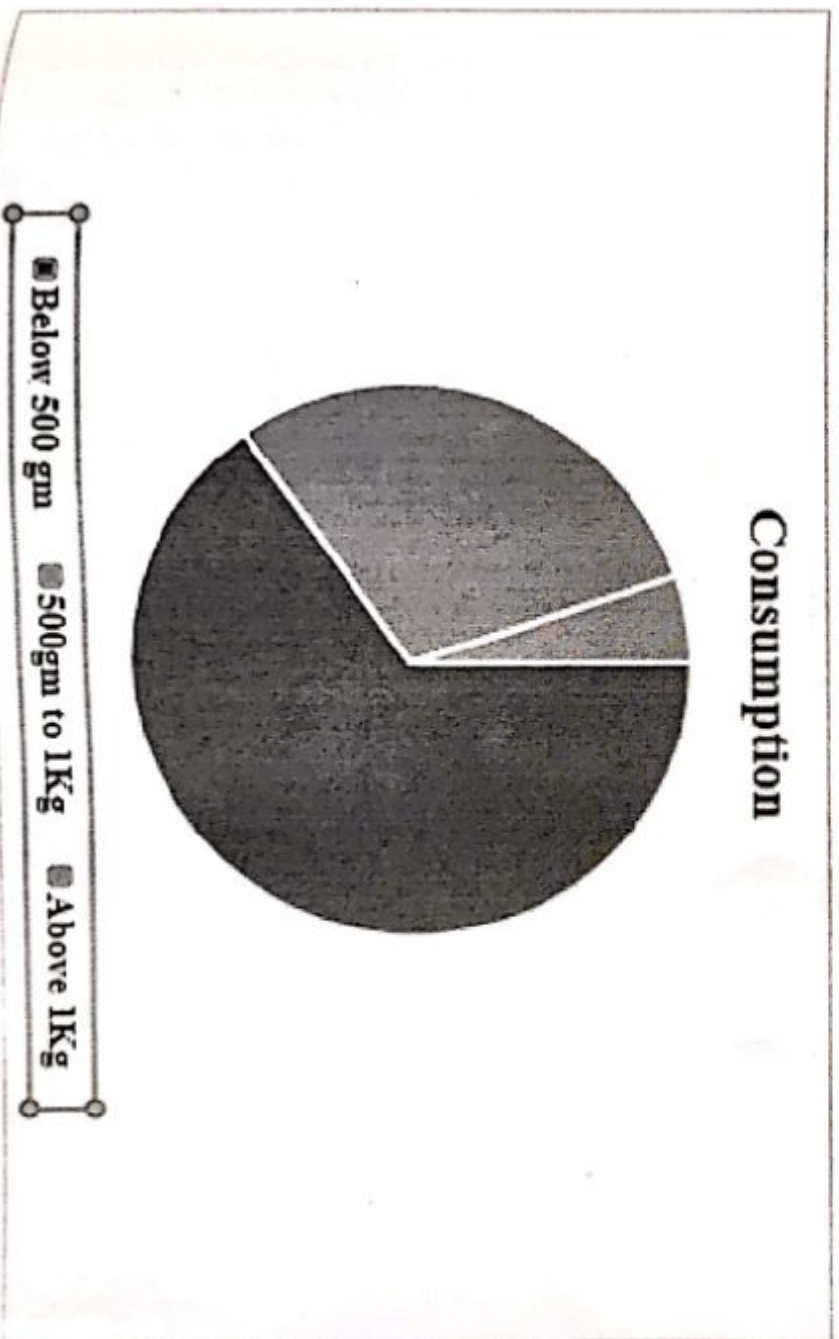
Table 4.15

Showing the average amount of money spending per month by the students for purchasing health drinks.

Money spends	No. of respondents	Percentage
Less than 500	139	87.42
500 to 1000	17	10.69
More than 1000	3	1.89
Total	159	100

Source: primary data

Table 4.15 reveals that the average money spends per month by the students for purchasing health drinks. Among 159 samples, 87.42% of students are spending less than 500 rupees for purchasing health drinks, 10.69% of students are spending 500 to 1000 rupees for purchasing health drinks and 1.89% are spending more than 1000 rupees for purchasing it.

Figure 4.15

Money spend

■ Less than 500 ■ 500 to 1000 ■ More than 1000

Scanned with OKEN Scanner
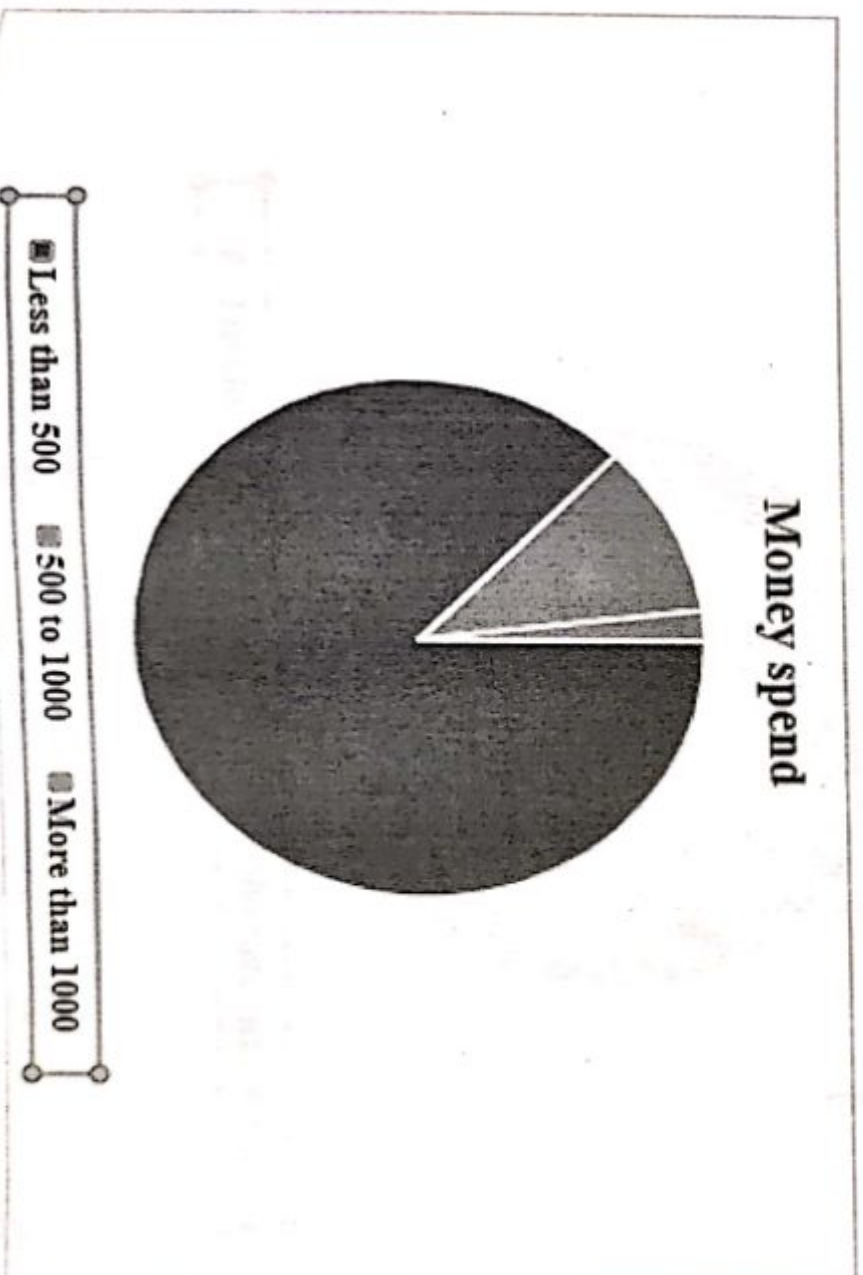
Table 4.16

Showing the matters examine by the students, while purchasing health drinks.

Manufactures name	No of respondents	Percentage
Yes	106	66.67
No	53	33.33
Total	159	100

Source: primary data

Table 4.16.1 reveals that the factors examine by the students, while they purchasing health drinks. This table shows that 66.67% students give importance to manufactures name and 33.33% of them not give importance to it.

Figure 4.16.1

Manufactures name

■Manufactures name Yes   ⊟Manufactures name No
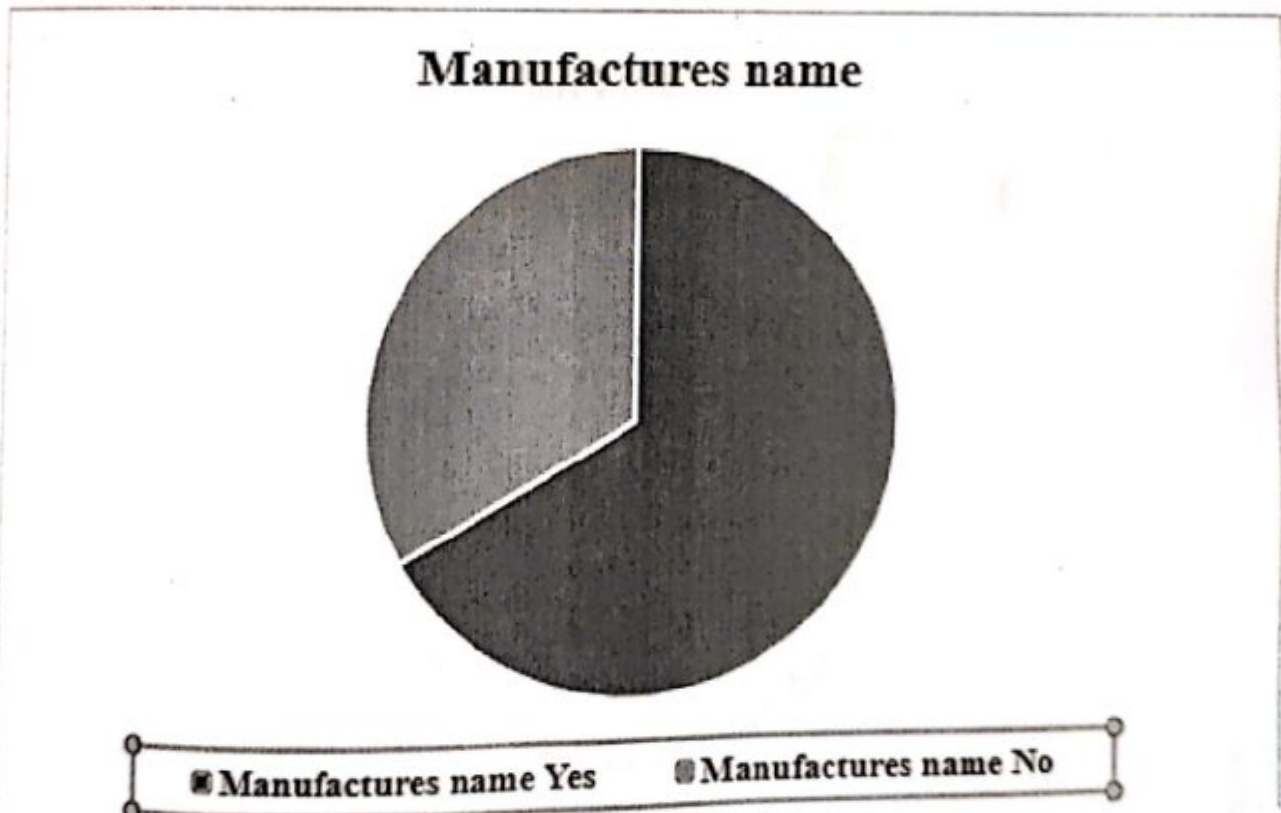
Table 4.16.2

Price

Price	No of respondents	Percentage
Yes	139	87.42
No	20	12.58
Total	159	100

Source: primary data

Table 4.16.2 reveals that the factors examine by the students, while they purchasing health drinks. In this table we can clear that 87.42% students giving importance to price and balance 12.58% students are not giving importance to price.

Figure 4.16.2

Price

■ Yes ▫ No
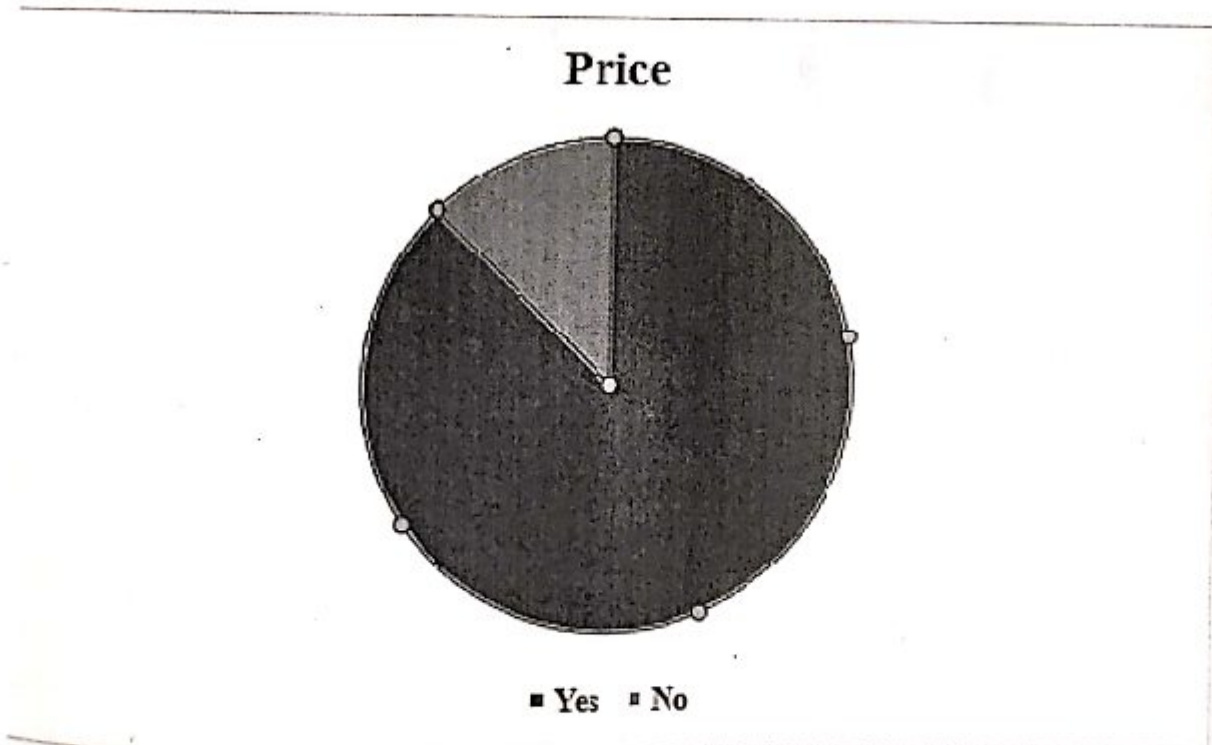
Special offers

Special offer	No of respondents	Percentage
Yes	108	67.92
No	51	32.08
Total	159	100

Source: primary data

Table 4.16.4 reveals that the factors examine by the students, while they purchasing health drinks. In this table we can clear that 67.92% students are considering special offer while they purchase it and 32.08% students are not considered it.

Figure 4.16.3

Special offer

■ Yes ◻ No
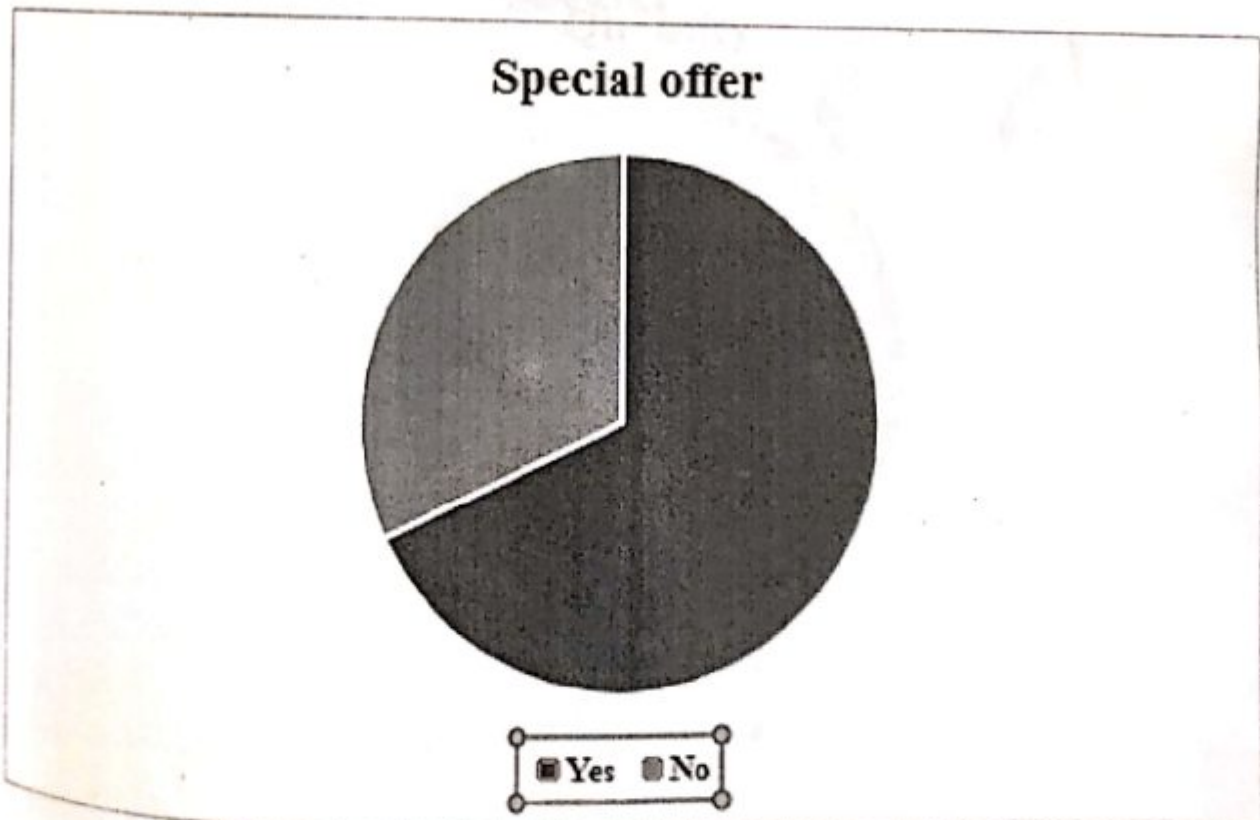
Table 4.16.4

Quantity

Quantity	No of respondents	Percentage
Yes	144	90.57
No	15	9.43
Total	159	100

Sources: primary data

Table 4.16.4 r reveals that the factors examine by the students, while they purchasing health drinks. In this table we can clear that 90.57% students are giving importance to quantity and 9.43% students are not giving importance to it.

Figure 4.16.4
Quantity

■ Yes ■ No
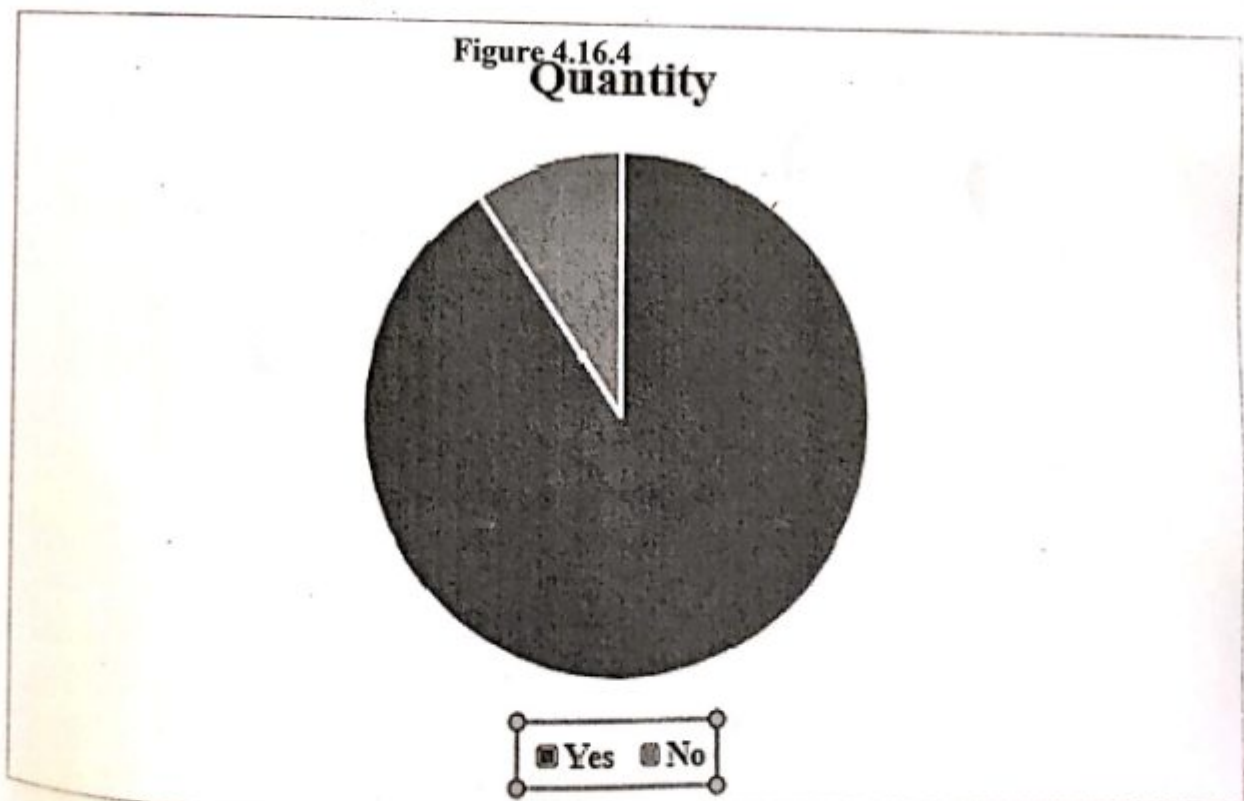
Table 4.16.5

Date of manufacture

Date of manufacture	No of respondents	Percentage
Yes	143	89.94
No	16	10.06
Total	159	100

Source: primary data

Table 4.16.5 reveals that the factors examine by the students, while they purchasing health drinks. In this table we can clear that 89.94% students are giving importance to manufacturing date and 10.06% students are not giving importance to it.

Figure 4.16.5

Date of manufacture

■ Yes ▨ No
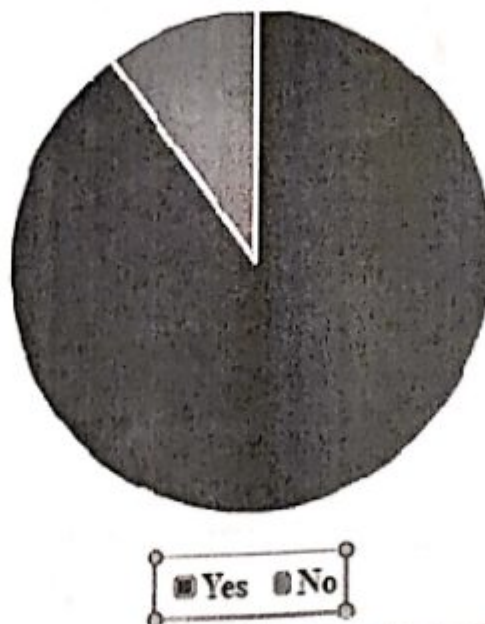
Table 4.16.6

Ingredients

Ingredients	No of respondents	Percentage
Yes	111	69.81
No	48	30.19
Total	159	100

Source: primary data

Table 4.16.6 reveals that the factors examine by the students, while they purchasing health drinks. In this table we can clear that 69.81% students are giving importance to ingredients and 30.19% students are not giving importance to it.

Figure 4.16.6

Ingredients

■ Yes ■ No
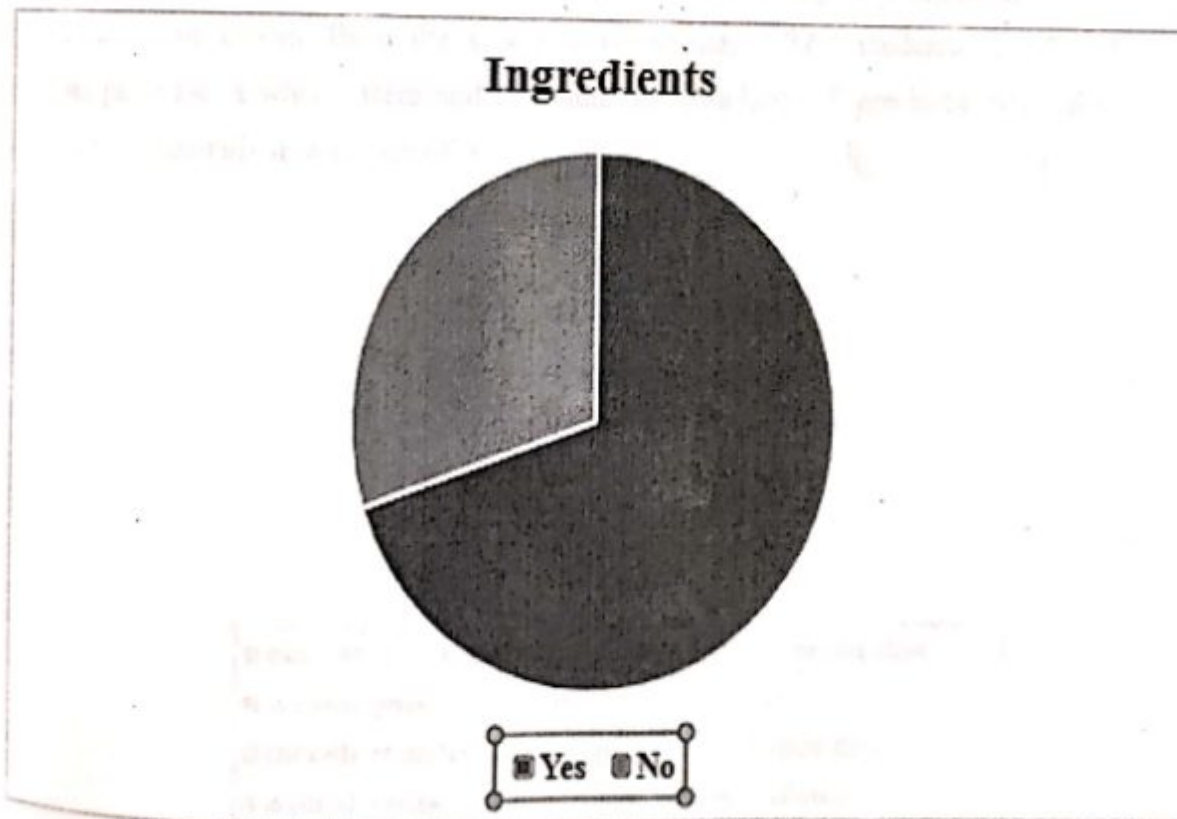
Table 4.17
Showing the reason for purchasing health drinks.

Reason for purchase	No of respondents	Percentage
name of the manufacturer	9	5.66
improves concentration	6	3.77
improve physical stamina	47	29.56
taste/flavor	75	47.17
casually as matter of prestige	0	0
part of regular diet	2	1.26
medical advice	11	6.92
influence of others	6	3.77
offers and discounts	3	1.89

Source: primary data

Table 4.17 reveals that the reason for purchasing health drinks. Among 159 samples, 47.17% of students are purchasing health drinks because of its taste. 29.56% of students are buying it for improving their physical stamina. 6.92% students are purchasing it as per medical advice. 5.66% students are buying it considering the name of the manufacture. Some of the users are buy it for improving concentration and by the influence of others. Both the category constitutes 3.77% students. 1.89% of students purchase it when offers and discounts are available. There is no one using health drinks casually as a matter of prestige.

Figure 4.17

Reason for purchase

- name of the manufacturer
- improves concentration
- improve physical stamina
- taste/flavor
- casually as matter of prestige
- part of regular diet
- medical advice
- influence of others
- offers and discounts
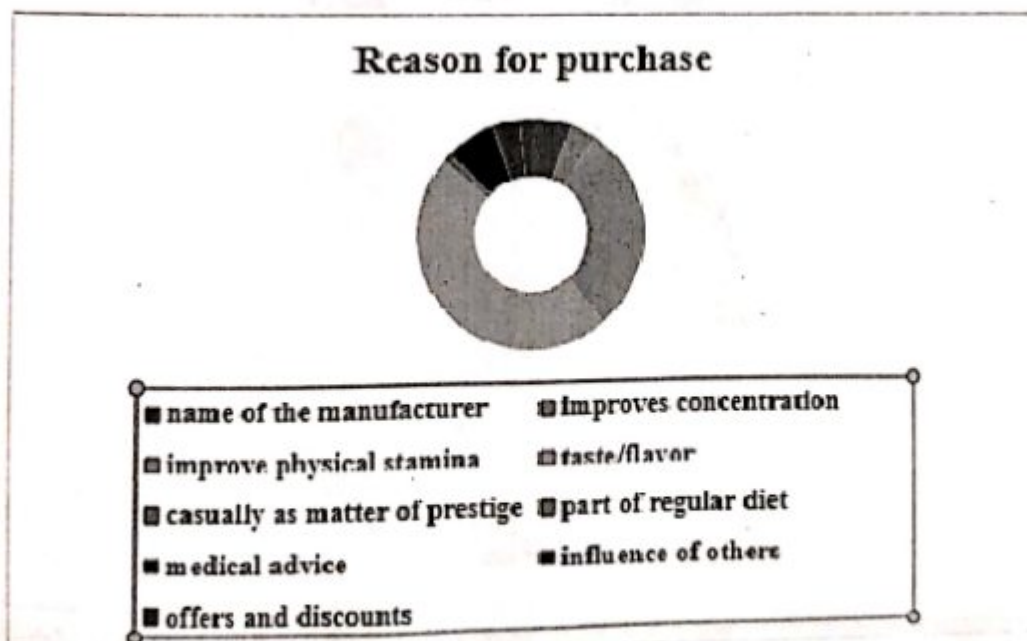
Table 4.18

Showing the satisfaction level of students

Health improvement	No, of respondents	Percentage
Highly satisfied	38	23.90
Satisfied	61	38.36
Neutral	48	30.19
Dissatisfied	8	5.03
Highly dissatisfied	4	2.52
Total	159	100

Source: primary data

Table 4.18.1 reveals that the satisfaction level of *students* regarding health improvement using health drinks. Among 159 samples, majority of respondents comes under the category of satisfied. They constitute 38.36% of students. 23.90% of the students are highly satisfied and 30.19% of students are neutral. 5.03% of them are dissatisfied and 2.52% students are highly dissatisfied.

Figure 4.18.1

Health improvment

Highly satisfied ■Satisfied ●Nuetral □Dissatisfied ■Highly dissatisfied

37
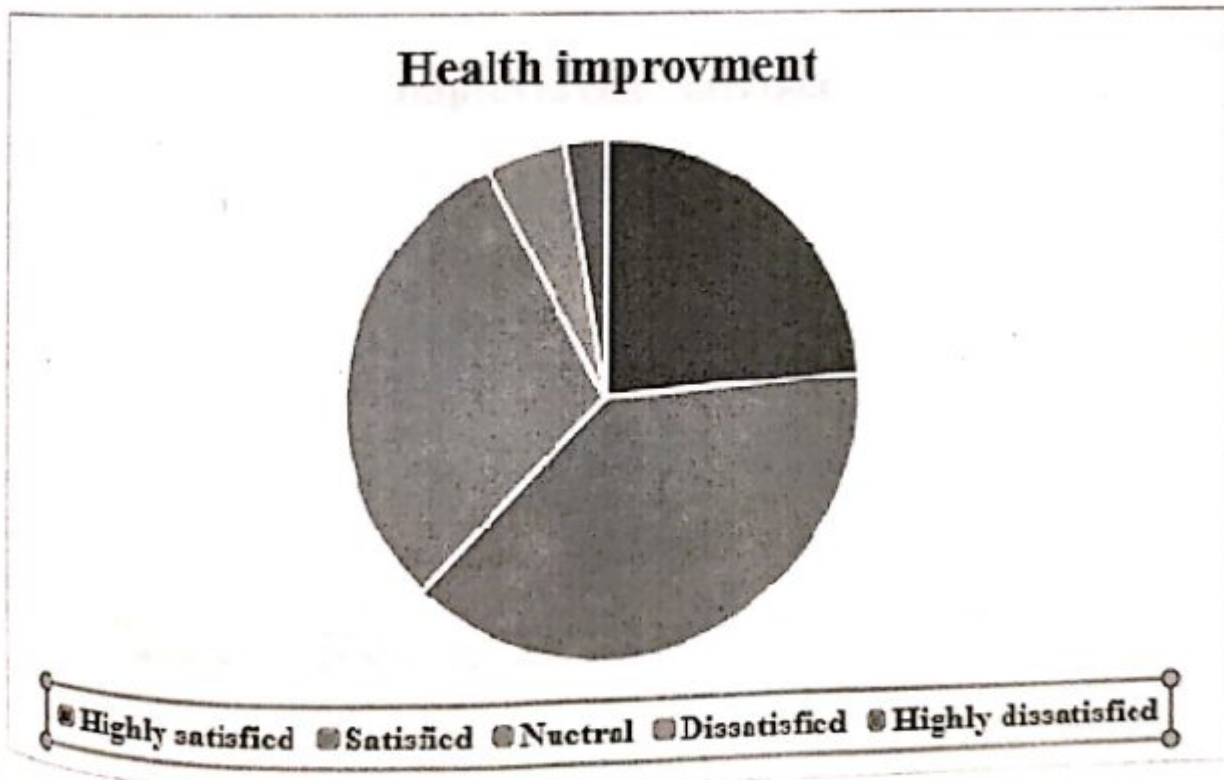
Table 4.18.2

Improves concentration

Improves concentration	No. of respondents	Percentage
Highly satisfied	20	12.58
Satisfied	69	43.40
Neutral	49	30.82
Dissatisfied	16	10.06
Highly dissatisfied	5	3.14
Total	159	100

Source: primary data

Table 4.18.2 reveals that the satisfaction level of students regarding improvement of concentration using health drinks. Among 159 samples, majority of respondents comes under the category of satisfied. They constitute 43.40% of students. 30.82% students are neutral and 12.58% of students are highly satisfied. 10.06% of students are dissatisfied and 3.14% of students are highly dissatisfied.

Figure 4.18.2

Improves concentration

■Highly satisfied ■Satisfied ■Nuetral ■Dissatisfied ■Highly dissatisfied

38
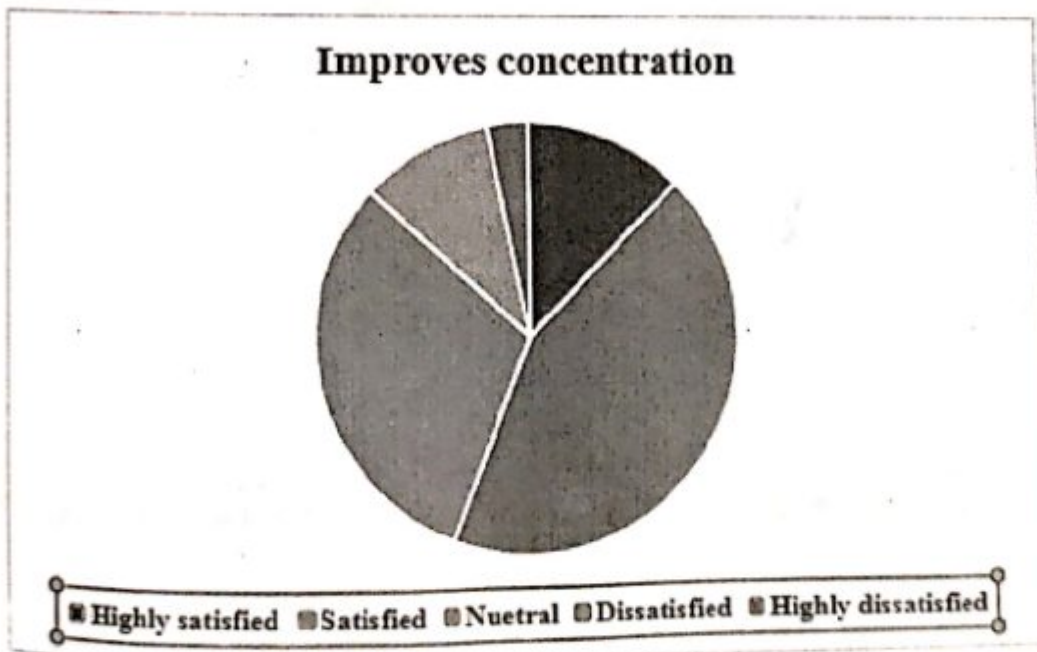
Table 4.18.3
Quality

Quality	No. of respondents	Percentage
Highly satisfied	47	29.56
Satisfied	79	49.69
Neutral	26	16.35
Dissatisfied	5	3.14
Highly dissatisfied	2	1.26
Total	159	100

Source: primary data

Table 4.18.3 reveals that the student's satisfaction level of health drinks regarding quality. Among 159 samples, 49.69% students are satisfied with its quality. 29.56% are highly satisfied and 16.35% are neutral. 3.14% students are dissatisfied and 1.26% of them are highly dissatisfied.

Figure 4.18.3

Quality
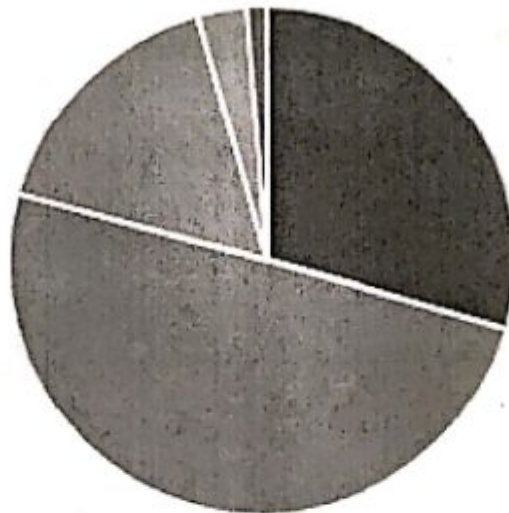
■Highly satisfied ■Satisfied ■Nuetral □Dissatisffed ■Highly dissatisfied

Table 4.18.4
Availability

Availability	No. of respondents	Percentage
Highly satisfied	60	37.74
Satisfied	69	43.40
Neutral	23	14.46
Dissatisfied	4	2.52
Highly dissatisfied	3	1.88
Total	159	100

Source: primary data

Table No. 4.18.4 reveals that the satisfaction level of students using health drinks regarding its availability. Among 159 samples, 49.69% students are satisfied with its quality. 29.56% are highly satisfied and 16.35% are neutral. 3.14% students are dissatisfied and 1.26% of them are highly dissatisfied.

Figure 4.18.4

Availability

■ Highly satisfied ■ Satisfied ■ Nuetral ■ Dissatisffed ■ Highly dissatisfied
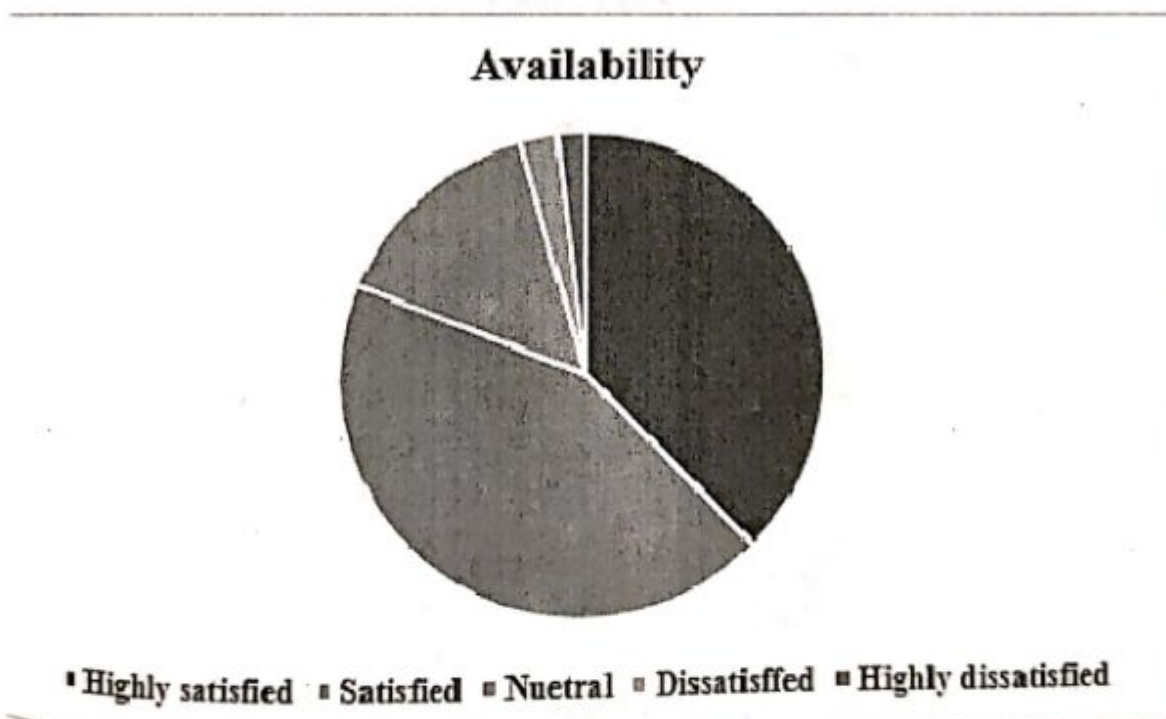
Table 4.18.5

Taste

Taste	No. of respondents	Percentage
Highly satisfied	69	43.40
Satisfied	70	44.03
Neutral	17	10.69
Dissatisfied	2	1.26
Highly dissatisfied	1	0.62
Total	159	100

Source: primary data

Table 4.18.5 reveals that the satisfaction level of students using health drinks regarding its taste. Among 159 samples, 44.03% of students are satisfied with the taste of health drinks. 43.40% are highly satisfied and 10.69% are neutral position. 1.26% of them are dissatisfied and .62% of them are highly dissatisfied.

Figure 4.18.5

Taste
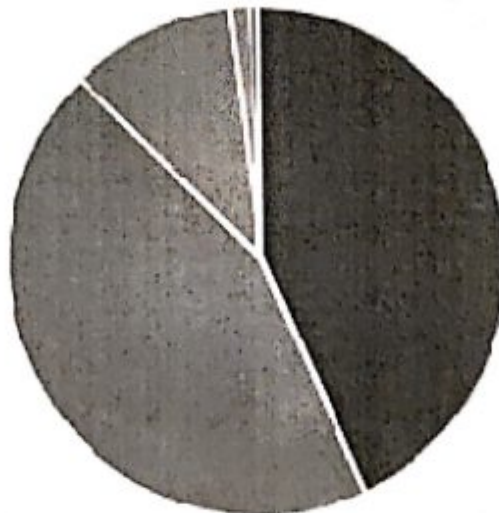
■Highly satisfied ■Satisfied ■Nuetral ◻Dissatisffed ■Highly dissatisfied

41

Table 4.18.6

Price

Price	No. of respondents	Percentage
Highly satisfied	38	23.90
Satisfied	77	48.43
Neutral	34	21.38
Dissatisfied	5	3.14
Highly dissatisfied	5	3.15
Total	159	100

Source: primary data

Table 4.18.6 reveals that the satisfaction level of students using health drinks regarding its price. Among 159 samples, 48.43% of students are satisfied with the price of the product. 23.90% of them are highly satisfied and 21.38% of them are neutral position. 3.15% of them are highly dissatisfied and 3.14% of them are dissatisfied with the price of the product.

Figure 4.18.6

Price

■ Highly satisfied ■ Satisfied ■ Nuetral ■ Dissatisffed ■ Highly dissatisfied

42
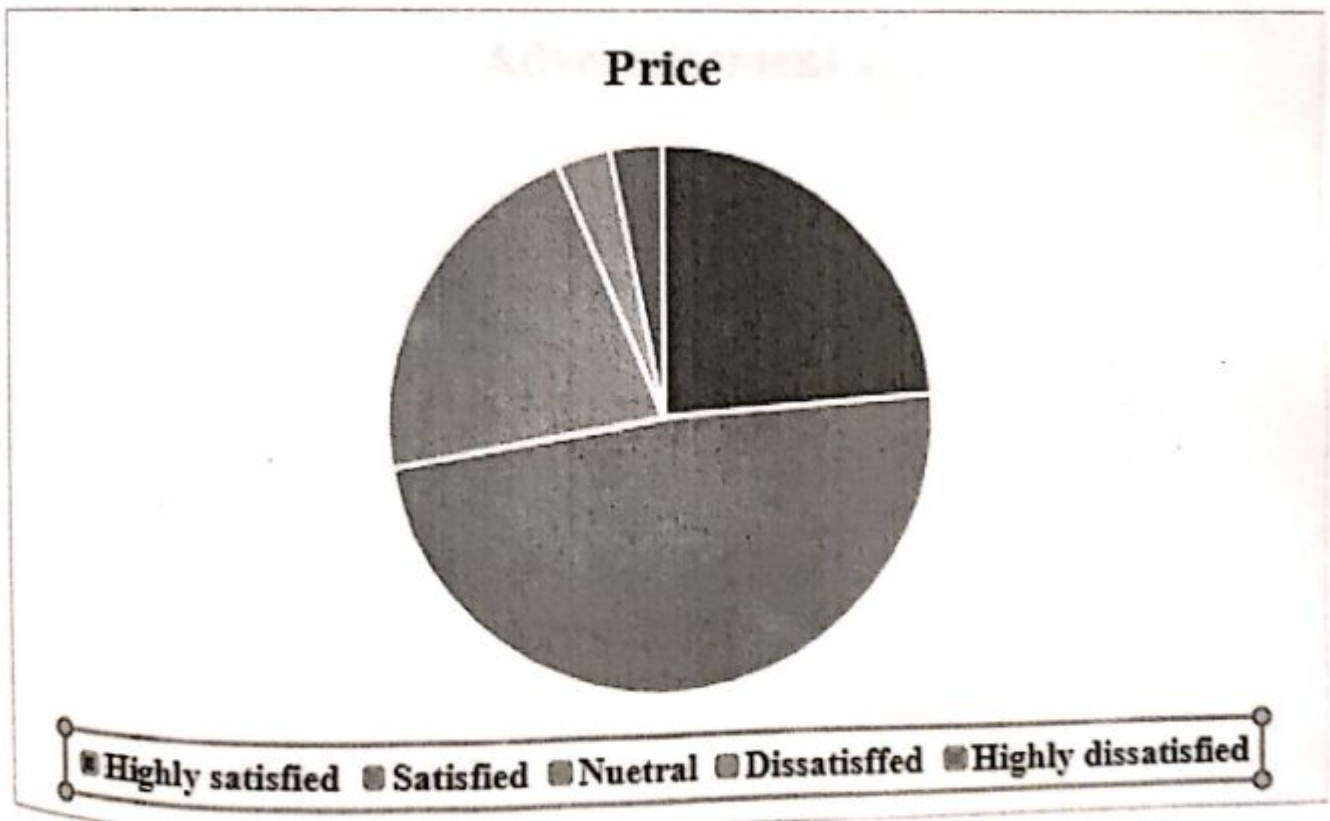
Table 4.18.7

Advertisement

Advertisement	No. of respondents	Percentage
Highly satisfied	40	25.16
Satisfied	70	44.03
Neutral	32	20.13
Dissatisfied	11	6.92
Highly dissatisfied	6	3.76
Total	159	100

Source: primary data

Table 4.18.7 reveals that the satisfaction level of students using health drinks regarding its advertisement. Among 159 samples, 44.03% of students are satisfied with the advertisement provided by the brands. 25.16% of them are highly satisfied and 20.13% of them are neutral in position. 6.92% of them are dissatisfied and 3.76% of them are highly dissatisfied.

Figure 4.18.7

Advertaisement

■ Highly satisfied ■ Satisfied ■ Nuetral ■ Dissatisffed ■ Highly dissatisfied
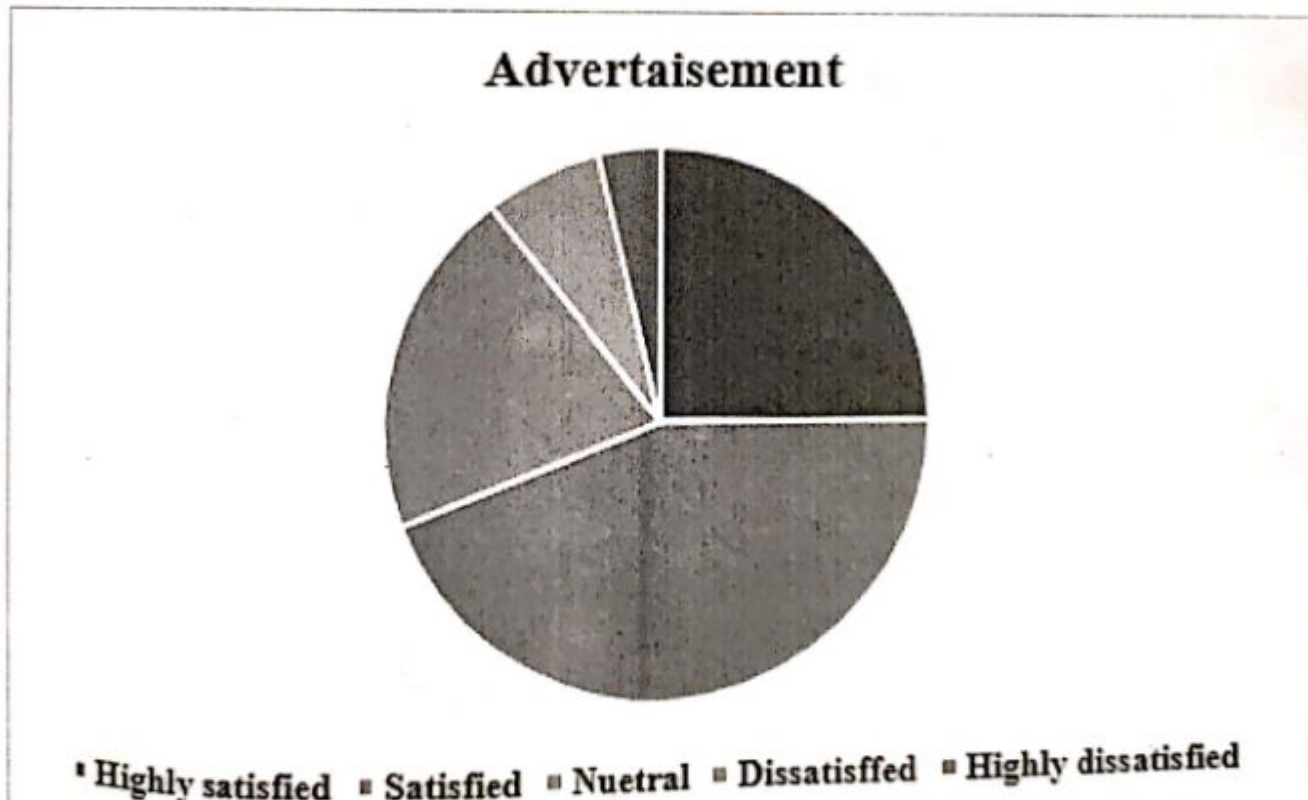
Table 4.18.8

Packaging

Packaging	No. of respondents	Percentage
Highly satisfied	51	32.07
Satisfied	78	49.06
Neutral	19	11.95
Dissatisfied	8	5.03
Highly dissatisfied	3	1.89
Total	159	100

Source: primary data

Table 4.18.8 reveals that the satisfaction level of students using health drinks regarding its packaging. Among 159 samples, 49.06% of students are satisfied with the packaging of the product and 32.07% are highly satisfied with it. 11.95% of them are neutral in position and 5.03% are dissatisfied with it. 1.89% of students are highly dissatisfied with the product packaging.

Figure 4.18.8

Packaging
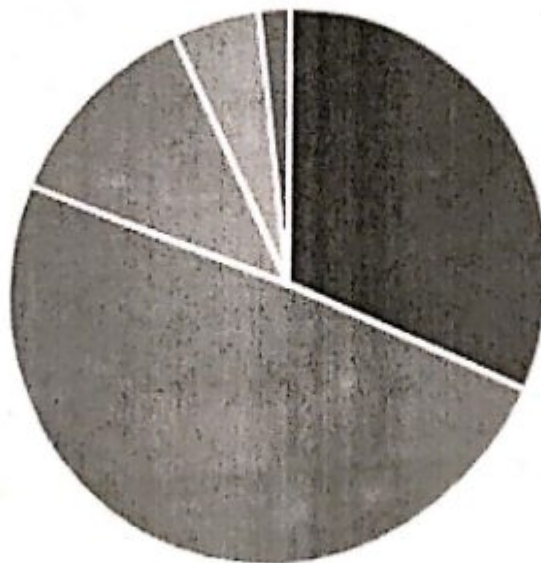
Highly satisfied Satisfied Nuetral Dissatisffed Highly dissatisfied

Table 4.18.9

Size

Size	No. of respondents	Percentage
Highly satisfied	34	21.38
Satisfied	83	52.20
Neutral	20	12.58
Dissatisfied	15	9.43
Highly dissatisfied	7	4.40
Total	159	100

Source: primary data

Table 4.18.9 reveals that the satisfaction level of students using health drinks regarding its size. Among 159 samples, 52.20% of students are satisfied with the size of the product. 21.38% of them are highly satisfied and 12.58% of them are in neutral position. 9.43% of them are dissatisfied with the size of the product and 4.40% of them are highly dissatisfied.

Figure 4.18.9

Size

Highly satisfied Satisfied Nuetral Dissatisffed Highly dissatisfied
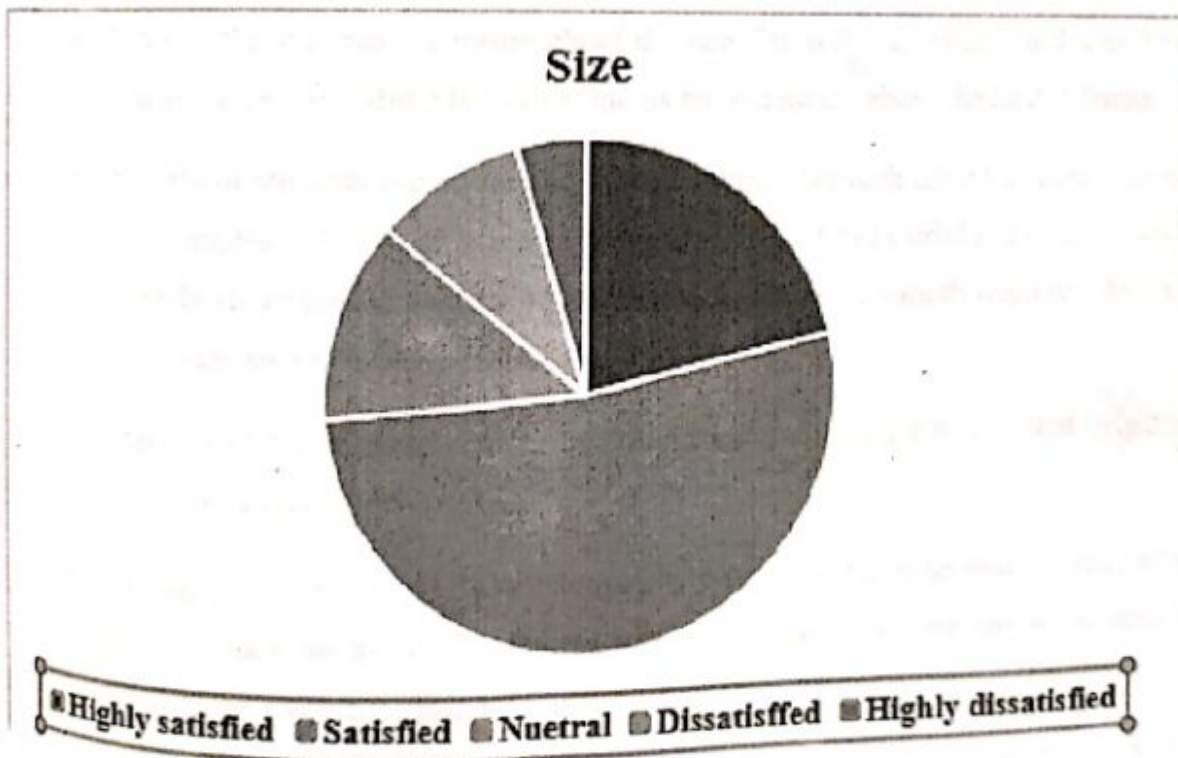
CHAPTER-V

FINDINGS, SUGGESTIONS ANDCONCLUSION

FINDINGS

- The study is conducted to understand brand preference of health drinks among students and to examine the effect of brand promise on repurchase intention. Among 159 samples, 53.46% students are female and 46.54% aremale.

- Majority of the students that is 55.35% respondents are high school students and 44.65% of them are upper primary students.

- Most of the student's family is nuclear, which consist 81.13% students and18.87% student's family is joint family.

- Among 159 samples, 47.87% of students' parents have private job.37.11%are self-employed and 9.43% of them have government job. Only 5.66% ofparents have job in service sector.

- Among 159 sample, 68.55% families are earning below 20000. 24.53% student's family earn 20000 to 60000 and 6.92% student's family earn above 60000.

- Most of the students are aware about the benefits and uses of health drinks. They constitute 76.73%. But 5,03% of students are not aware about the health drinks.

- 48.43% of students are aware about health drinks through advertisement. Among 159 samples, 13.84% of students are aware about health drinks through friends, 27.04% are aware through family members, 1.89% are aware through retailors and 8.80% are aware through doctors.

- Majority of the students reveals that television is the major source that helpthem too aware about health drinks.

- Among 159 samples, 63.52% of students give importance to brand name, while they purchase health drinks. But 13.84% of students not give any importance to brand name while they purchase it.

- The majority of students reveal that the most preferred brand among them is boost. They constitute 63.52% and 36.48% of students prefer Horlicks as their health drink.

- Most of the students reveals that the presence of a celebrity does not help them to choose a brand.

- Among 159 samples, 65.41% of students are consuming below 500 gm per month. 29.56% of students are consuming 500 gm to 1 kg. Only 5.03% students are consuming health drinks above 1 kg.

- 87.42% of students are spent only below 500/- for purchasing health drinks.

- Most of the students give importance to manufacture name while they purchase health drinks.

- 87.42% of students giving importance to price, while they purchasing health drinks.

- Most of the students give importance to offers and discounts provided by the brand.

- 90.57% students are giving importance to quantity and 9.43% students are not giving importance to it.

- Most of the students believes that date of manufacturing is an important think while they purchase health drinks.

- 69.81% students are giving importance to ingredients and 30.19% studentsare not giving importance to it.

- Among 159 samples, 47.17% of students are purchasing health drinks because of its taste. 29.56% of students are buying it for improving their physical stamina. 6.92% students are purchasing it as per medical advice. 5.66% students are buying it considering the name of the manufacture. Some of the users are buy it for improving concentration and by the influence of others. Both the category constitutes 3.77% students. 1.89% of students purchase it when offers and discounts are available. There is no one using health drinks casually as a matter of prestige.

- Majority of the students using health drinks are satisfied with the health improvements.

Scanned with OKEN Scanner

- 43.40% of students are satisfied with the use of health drinks regarding improvement of concentration. 30.82% students are neutral and 12.58% of students are highly satisfied. 10.06% of students are dissatisfied and 3.14% of students are highly dissatisfied.

- Among 159 samples, 49.69% students are satisfied with its quality. 29.56% are highly satisfied and 16.35% are neutral. 3.14% students are dissatisfied and 1.26% of them are highly dissatisfied.

- Among 159 samples, 49.69% students are satisfied with its quality. 29.56% are highly satisfied and 16.35% are neutral. 3.14% students are dissatisfied and 1.26% of them are highly dissatisfied.

- 44.03% of students are satisfied with the taste of health drinks. 43.40% are highly satisfied and 10.69% are neutral position. 1.26% of them are dissatisfied and .62% of them are highly dissatisfied.

- From the total number of students, 48.43% of students are satisfied with the price of the product. 23.90% of them are highly satisfied and 21.38% of them are neutral position. 3.15% of them are highly dissatisfied and 3.14% of them are dissatisfied with the price of the product.

- Among 159 samples, 44.03% of students are satisfied with the advertisement provided by the brands. 25.16% of them are highly satisfied and 20.13% of them are neutral in position. 6.92% of them are dissatisfied and 3.76% of them are highly dissatisfied.

- 49.06% of students are satisfied with the packaging of the product and 32.07% are highly satisfied with it. 11.95% of them are neutral in position and 5.03% are dissatisfied with it. 1.89% of students are highly dissatisfied with the product packaging.

- Among 159 samples, 52.20% of students are satisfied with the size of the product. 21.38% of them are highly satisfied and 12.58% of them are in neutral position. 9.43% of them are dissatisfied with the size of the product and 4.40% of them are highly dissatisfied.

- The study reveals that the brand preference among male and female health drink users are same

- The study concluded that there is no significant effect of brand promise on repurchase intention among male and female health drink users.

SUGGESTIONS

- It is better to provide proper knowledge about health drinks to studentswhich help to find good nutrition for their health.

- The brands should make more attractive advertisements which result ahike in its sales.

- The brands should try to engage with the community that it exists andcreate trust among them, which give more value to the brand.

- The brand should try to introduce new scheme which attract moreconsumers to their products

- The brand should do activities relates with social responsibility whichcreate good reputation to the company.

- To communicate with retailors regularly, which help company to find outits drawbacks.

CONCLUSION

From this study, the brand preference among male and female users and the effectof brand promise on repurchase intention are analyzed. Brand promise is related with brand loyalty which can be established through providing good quality products, availability of products, taste and colorful packaging and production of good healthy products. Customers are attracted to companies not only based on what they deliver but also the purpose and values they stand for. So good promisecreate trust and that leads brand loyalty which in turn brings to repurchaseintention. From this study it is clear that Boost and Horlicks brands has a very goodbrand loyalty among consumers which are top rated in the market. Hence brand promise has been a part of the consumers in choosing the brands of their health drinks.

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APPENDIX

BRAND PROMISE AND PRODUCT REPURCHASE INTENTION OF HEALTH DRINKS

I am N.MUTHUMEENA Thomas (GANESAR ARTS AND SCIENCE, MELAISIVAPURI) as part of my M com course, I am conducting a project to Analyze "brand promise and product repurchase intention of health drinks". I request you to spend some time to fill up the questions. I assure you that the information provided will be highly confidential and only used for educational purpose.

Socio-economic profile of students

1. Name of the student

----

2. Class

----

3. Gender

Female □ Male □ Other □

4. Name of the institution

Govt.Girls higher Secondary school, Ponnamaravathy

Annamalai Hr.Sec. School Ponnamaravathy

Chidambaram Hr.Sec. School Ponnamaravathy

5. Level of study

Upper primary □ High school □

6. Type of family

Nuclear family □ Joint family □

7. Occupation of parents

Government employee □ Private employee □ Self employed □ Service □

8. Monthly income of the family

Below 20000 □ 20000 to 60000 □ Above 60000 □

Awareness of health drinks

9. Are you aware about health
drinks?Yes □ No □ Maybe □

10. How did you come to know about the health drinks? Advertisement □ Friends □
Family members/relatives □ Retail shops □Doctors' advice □

11. Which media of advertisement mostly influence you to buy healthdrinks?

Television □ Newspaper □ Internet □ Posters □ Banners □

12. Will you keep brand name in your mind while purchasing healthdrinks?

Yes □ No □ Maybe □

13, Please tick the one health drink which you have consumed mostly?Horlicks □ Boost
□

14. Does the presence of a celebrity help you to recognize a brand?Yes □ No □ Maybe

15. Average quantity of health drinks consumed per month'Below 500 gm □ 500gm.to
1kg □ Above 1kg □

16. Average amount of money spent per month for health drinks?Less than 500 □ 500
to 1000 □ More than 1000 □

17. While you purchase your health drinks, the printed information youexamine is (please tick the relevant)

Name of the manufacturer	Yes	No
Price		
Special offer		
Quantity		
Date of manufacture		
Ingredients		

18. Reason for purchasing your preferred health drinks?

Name of the manufacture □ Improves concentration □

Improves physical stamina □ Taste/flavors □

Casually as a matter of prestige □ Part of regular diet □ Medical advice □

Influence of others □ Offers and discounts □

19. satisfaction level of consumers with regard to attributes of the branded health drinks?

	Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied
Health improvement					
Improves concentration					
quality					
availability					
taste					
price					
advertisement					
packaging					
size					

Questionnaire Link (Google form):

https://docs.google.com/forms/d/e/1FAIpQLSdlgU24DIuUeTv1LajKUCL DhPYzCuHh51u7GQXy7Es1mLc_LQ/viewform?vc=0&c=0&w=1&flr=0&gxids=7628

53

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Submitted in partial fulfillment of the

Requirement for the degree

Of

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Of

BHARATHIDASAN UNIVERSITY

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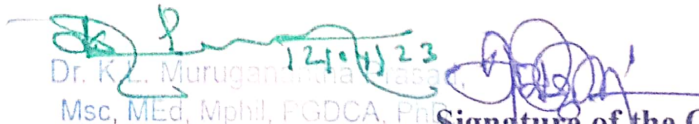
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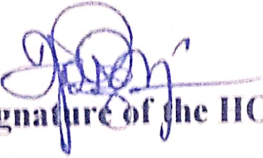
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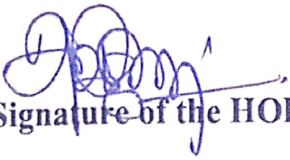
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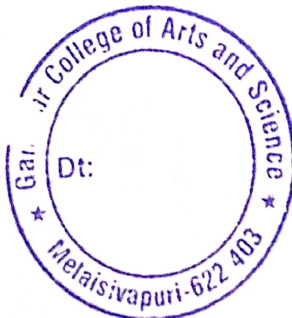
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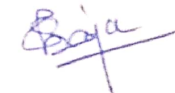
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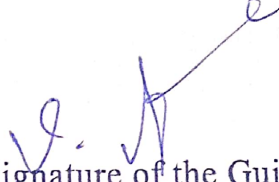Ganesar College of Arts & Science
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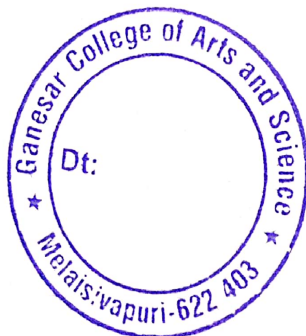
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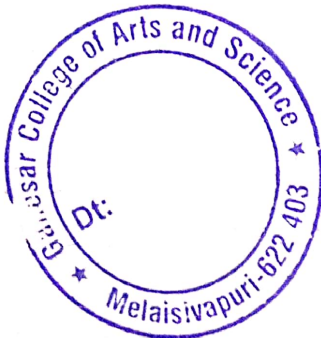
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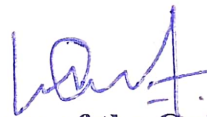
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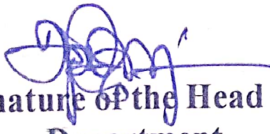
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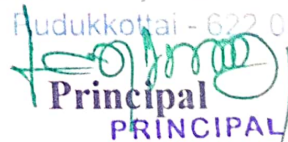
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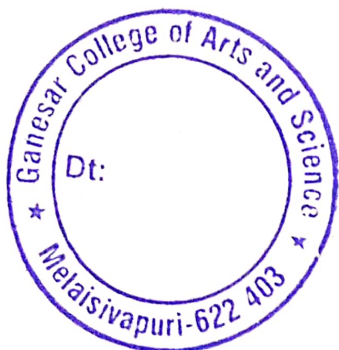
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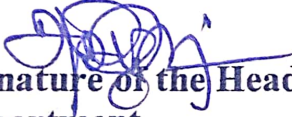
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ABSTRACT

Firstly, we introduce the notion of uniformly fuzzy continuous mapping and we establish the uniform continuity theorem in fuzzy settings. Furthermore, the concept of fuzzy Lipschitzian mapping is introduced and a fuzzy version for Banach's contraction principle is obtained. Finally, a special attention is given to various characterizations of fuzzy continuous linear operators. a critical analysis ,of the conditions of redefined fuzzy norm is studied by the help of the critical analysis, a decomposition theorem of fuzzy normed into *quasi-norm family is established inter relation between fuzzy normed linear space and generating space of *-quasi-norm family. Based on our results, classical principles of functional analysis (such as the uniform boundedness principle, the open mapping theorem and the closed graph theorem) can be extended in a more general fuzzy context.

INTRODUCTION

The concept of fuzzy set was introduced in 1965. If X is a nonempty set, a fuzzy set in X is a function μ from X into the unit interval [0,1]. The classical union and intersection of ordinary subsets of X can be extended by the following formulas, by

$$(V_{i\in I}\,\mu_i)(x) = \sup\{\mu_i(x) : i \in I\}\;,(\,\Lambda_{i\in I}\,\mu_i)(x)= \inf\{\mu_i(x) : i \in I\}.$$

From here to the notion of fuzzy topological space, there was one more step to be taken. Thus, in 1968, introduced the notion of fuzzy topological space. The definition is a natural translation to fuzzy sets of the ordinary definition of topological space. Indeed, a fuzzy topology is a family τ,of fuzzy sets in X, such that τ is closed with respect to arbitrary union and finite intersection and every constant function belong to τ

We introduce the concept of fuzzy n- normed linear space as a generalization of n-normed space ,introduced α- norms on a linear space corresponding to the fuzzy norm on a linear space .we introduce the notion of α-n-norm on a linear space corresponding to the fuzzy n-norm on a linear space.and establish some results.

One of the important problems concerning the fuzzy topological spaces is to obtain an adequate notion of fuzzy metric space. Many authors have investigated this question and several notions of fuzzy metric space have been defined and studied.

CHAPTER-I

PRELIMINARIES

DEFINITION 1.1

Let X be a non-empty set. Then the mapping $d : X \times X \to R$ is said to be **Metric** if d satisfies the following conditions.

(1) $d(x, y) \geq 0$ and $d(x, y) = 0$ iff $x = y$;

(2) $d(x, y) = d(y, x)$ $\forall$ $x, y \in X$;

(3) $d(x, y) \leq d(x, z) + d(z, y)$ $\forall$ $x, y, z \in X$.

the set X together with a metric is called a **Metric space** it is denoted by (X, d).

DEFINITION 1.2

The pair (X, M) is said to be a **Fuzzy metric space** if X is an arbitary set and M is a fuzzy set in $X \times X \times [0, \infty)$ satisfying the following conditions;

(1) $M(x, y, 0) = 0$, $\forall$ $x, y \in X$;

(2) For all $x, y \in X$, $x = y$ if and only if $M(x, y, t) = 1$ for all t>0;

(3) $M(x, y, t) = M(y, x, t)$ $\forall$ $x, y \in X$, $\forall$ $t > 0$;

(4) $M(x, z, t + s) \geq M(x, y, t) * M(y, z, s)$ $\forall$ $x, y, z \in X$ $\forall$ $t, s > 0$;

(5) For all $x, y \in X$, $M(x, y, .) : [0, \infty] \to [0, 1]$ is left continuous and $\lim_{t \to \infty} M(x, y, t) = 1$.

DEFINITION 1.3

A **Linear space** L is additive abelian group over the field of scalars and the scalar multiplication satisfies the following axioms;

1. $\alpha(x+y) = \alpha x + \alpha y$;

2. $(\alpha+\beta)x = \alpha x + \beta y$;

3. $(\alpha\beta x) = \alpha\beta(x)$;

4. $1x = x$, where α and β are scalars and $x, y \in L$.

DEFINITION 1.4

A **Normed linear space** is a linear space N in which to each vector x, there corresponds a real number denoted by $\|x\|$ and called the **norm of x** in such a manner that,

1. $\|x\| \geq 0$ and $\|x\| = 0$ iff $x = 0$;

2. $\|x + y\| \leq \|x\| + \|y\|$;

3. $\|\alpha x\| = |\alpha| \|x\|$.

DEFINITION 1.5

Let X be a non-empty set. A **Fuzzy set** A in X is characterized by its membership function $\mu(x) : X \to [0, 1]$ and $\mu(X)$ is interpreted as the degree of membership of element x in fuzzy set A for each $x \in X$.

A fuzzy set $\tilde{A}$ is defined by $\tilde{A} = \{(x, \mu_A(x)) : x \in A, \mu_A(x) \in [0, 1]\}$

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DEFINITION 1.6

Let X be a vector space over a field k (where k is $\mathbb{R}$ or $\mathbb{C}$) and $*$ be a continuous t-norm. a fuzzy set N in $X \times [0, \infty)$ is called a **Fuzzy norm** on X

If it satisfies;

1. $N(x, 0) = 0$, $\forall x \in X$;

2. $N(x, t) = 1$, $\forall\ t > 0$ if and only if $x = 0$;

3. $N(\lambda_x, t) = N(x, \frac{t}{|\lambda|})$,, $\forall\ x \in X$, $\forall\ t \geq 0$, $\forall\ \lambda \in K$;

4. $N(x + y, t + s) \geq N(x, t) * N(y, s)$, $\forall x, y \in X$, $\forall t, s \geq 0$;

5. $\forall\ x \in X, N(x, .)$ is left continuous and $\lim\limits_{t \to \infty} N(x, t) = 1$

6. $N(x, t) > 0$, $\forall\ d > 0 \Rightarrow x = 0$

7. $\forall\ x \neq 0, N(x, .)$ is a continuous function and strictly increasing on the subset $\{t : 0 < N(x, t) < 1\}$ of $\mathbb{R}$.

The triple $(X, N, *)$ will be called **Fuzzy normed linear space** (briefly FNLS)

DEFINITION 1.7

Let $(X, N, *)$ be fuzzy normed linear space and (x_n) be a sequence in X. The sequence (x_n) is said to be **Convergent** if there exists $x \in X$ such that

$$\lim\limits_{t \to \infty} N(x_n - x, t) = 1, \forall\ t > 0.$$

DEFINITION 1.8

Let $(X, N, *)$ be fuzzy normed linear space and (x_n) be a sequence in X. Then the sequence X is called **Limit of the sequence** x_n and we denote $\lim_{n \to \infty} x_n = x$ or $x_n \to x$.

DEFINITION 1.9

Let $(X, N, *)$ be a fuzzy normed linear space and (x_n) be a sequence in X. The sequence (x_n) is called **Cauchy sequence** if,

$$\lim_{n \to \infty} N(x_{n+p} - x_n, t) = 1, \forall \ t > 0, \forall \ p \in N^*.$$

DEFINITION 1.10

Let N be a normed linear space. If every cauchy sequence convergent in N. then the N is said to be **complete**.

This is, if $\|x_m - x_n\| \to o$ as $m, n \to \infty$ then $\exists \ n \in N$ such that

$$\|x_n - x\| \to o \text{ as } n \to \infty.$$

DEFINITION 1.11

A complete normed linear space is called a **Banach space**.

DEFINITION 1.12

Let $(X, N, *)$ is said to be **Complete** if any cauchy sequence in X is convergent to a point in X.

A complete fuzzy normed linear space will be called a **Fuzzy banach space**

DEFINITION 1.13

A subset A of X is called **Fuzzy bounded set,** if $\forall \ \alpha \in (0,1)$ there exists $t_a > 0$. such that $A \subset B(0, \alpha, t_a)$.

DEFINITION 1.14

Let (M_1, d_1) and (M_2, d_2) be two metric spaces .let a $\in M_1$. A function f: $M_1 \rightarrow M_2$ is said to be **continuous** at a if given $\epsilon > 0$ there exists $\delta > 0$ such that

$$d_1(x, a) < \delta \Rightarrow d_2(f(x), f(a)) < \epsilon$$

f is said to be **continuous** if it is continuous at every point of M_1.

DEFINITION 1.15

Let (M_1, d_1) and (M_2, d_2) be two metric spaces. A function f: $M_1 \rightarrow M_2$ is said to be **uniformly continuous** on M_1 if given $\epsilon > 0$ there exists $\delta > 0$ such that $d_1(x, y) < \delta \Rightarrow d_2(f(x), f(y)) < \epsilon$

DEFINITION 1.16

A mapping $T : X \rightarrow y$ is said to be **fuzzy continuous** at $x_0 \in X$, if $\forall \epsilon > 0 , \forall \alpha \in (0, 1)$ there exists $\delta = \delta(\epsilon, \alpha, x_0) > 0$ there exists $\beta = \beta(\epsilon, \alpha, x_0) \in (0, 1)$such that

$$\forall x \in X : N_1(x - x_0, \delta) > \beta,$$

we have that $N_2(T(x) - T(x_0), \epsilon) > \alpha$

if T is fuzzy continuous at each point of X,then T is called **fuzzy continuous** on X

DEFINITION 1.17

A mapping $T : X \to Y$ is said to be **Uniformly fuzzy continuous** on X. if $\forall \, \delta > 0,$ $\forall \, \alpha \in (0, 1)$ there exists $\delta = \delta \, (\epsilon, \infty) > o,$ there exists

$$\beta = \beta \, (\epsilon, \infty) \in (0, 1) \, . \text{ such that}$$

$\forall x, y \in X : N_1 \, (x - y, \delta) > \beta \text{ ,we have that}$

$$N_2 \, (T \, (x) - T \, (y) \, , \epsilon) > \alpha.$$

DEFINITION 1.18

A mapping $T : X \to Y$ is said to be **Fuzzy lipschitzian** on X . if there exists $L > 0$, such that

$$N_2 \, (T \, (x) - T \, (y) \, , t) \geq N_1 \, (x\text{-}y, \frac{t}{L}), \, (\forall) t > 0, (\forall) x, y \in X$$

if $L < 1$ we say that T is a **Fuzzy contraction** .

DEFINITION 1.19

A mapping between two vector spaces that is compatible with their linear structures. more precisely,

A mapping $A : E \to F$,where E and F are vector spaces over a field K is calledthe **Linear operator** from E to F if it satisfies,

(1) $A \, (x + y) = Ax + Ay$;

(2) $A \, (\lambda x) = \lambda A \, (x)$ for all $x, y \in E$ and $\lambda \in K$.

DEFINITION 1.20

The metric space (X, d) is a **bounded** metric space if there exists $M > 0$, such that $d(x, y) \leq M$ for all $x, y \in X$. The metric space (X, d) which is not bounded is said to be **unbounded.**

DEFINITION 1.21

Let (U, N) be a fuzzy normed linear space and $A \subset U$. A is said to be **Fuzzy bounded** if for each r, where $0 < r < 1$ there exists $t > 0$ such that $N(x, t) > 1 - r$, $\forall x \in A$.

DEFINITION 1.22

Let (X, q^*) a generating space of ***- quasi norm family** and $\{x_n\}$ be a sequence in X. then $\{x_n\}$ is said to be convergent if $\exists x \in X$ such that

$$\lim_{n \to \infty} |x_n - x|_\alpha = 0 \; \forall \alpha \in [0, 1)$$

Then x is called the **limit of sequence** $\{x_n\}$ and we denote it by $\lim x_n$

DEFINITION 1.23

Let (x, q^*) a generating space of ***-quasi norm family** and $\{x_n\}$ be a sequence in X. then $\{x_n\}$ is said to be **Cauchy sequence** if

$$\lim_{n \to \infty} |x_{n+p} - x_n|_\alpha = 0 \; \forall \alpha \in [0, 1), \forall \quad p = 1, 2, \ldots$$

DEFINITION 1.24

A generating space of ***-quasi norm family** (X, q^*) is said to be complete if every Cauchy sequence in X converge to some point in X.

DEFINITION 1.25

Let $(X, |\cdot,\ldots, \cdot|_\alpha)$ be an α-n-normed space corresponding to the fuzzy n-norm N on X. Let G be an arbitrary nonempty subset of X and $x_0 \in X$. Then for every $x \in X$ and for every $x_2, x_3, \ldots, x_n \in X \setminus G$ which is independent of x and x_0,

$$d_{x_2, x_3, \ldots, x_n}(x, G) \leq |x - x_0, x_2, x_3, \ldots, x_n|_\alpha + d_{x_2, x_3, \ldots, x_n}(x_0, G), \tag{1}$$

where

$$d_{x_2, x_3, \ldots, x_n}(x, G) = \inf |x - g, x_2, x_3, \ldots, x_n|_\alpha \tag{2}$$

For each $G \subset X$ and $x_0 \in X$, we define

$$D_{x_2, x_3, \ldots, x_n}(x_0, G) = \{ x \in X : d_{x_2, x_3, \ldots, x_n}(x, G)$$

$$= |x - x_0, x_2, x_3, \ldots, x_n|_\alpha + d_{x_2, x_3, \ldots, x_n}(x_0, G), \tag{3}$$

for any $x_2, x_3, \ldots, x_n \in X \setminus G$ which is independent of x and x_0. We denote

$$P_{G, x_2, x_3, \ldots, x_n}(x) = \{ g_0 \in G : |x - g_0, x_2, x_3, \ldots, x_n|_\alpha = d_{x_2, x_3, \ldots, x_n}(x, G)\}$$

$$P^{-1}_{G, x_2, x_3, \ldots, x_n}(x_0) = \{ x \in X : |x - x_0, x_2, x_3, \ldots, x_n|_\alpha = d_{x_2, x_3, \ldots, x_n}(x, G)\},$$

Where $x_0 \in G$.

CHAPTER- II

DEFINITION 2.1

Let X be a linear space over the field F (real or complex) and $*$ is a continuous t- norm. A fuzzy subset N on X x R (R-set of all real numbers) is called a fuzzy norm on X iff for x,y ϵ X and c ϵ F.

(1) $\forall t \epsilon R$ with $t \leq 0, N(x, t) = 0$.

(2) $(t \epsilon R, t > 0; N(x, t) = 1$ iff $x = 0$;

(3) $\forall t \epsilon R, t > 0, N(cx, t) = N(x, \frac{t}{|c|})$ if $c \neq 0$

(4) $\forall s, t \epsilon R, x, y \epsilon X; N(x + y, t + s) \geq N(x, t) * N(y, s)$

(5) $\lim_{n \to \infty} N(x, t) = 1$

The triplet $(X, N, *)$ will be referred to as a **fuzzy normed linear space**.

EXAMPLE

Let X be the linear space over the field F and N: X x R $\to$ [0,1] is defined by

$$N(x,t) = \begin{cases} \frac{t - \|x\|}{t + \|x\|} & \text{for } t > \|x\| \\ 0 & \text{for } t \leq \|x\| \end{cases}$$

then $(X, N, *)$ is a fuzzy normed linear space

PROOF

Conditions (1)(2)(3) and (5) are directly satisfied from the definition for (4) $\Rightarrow$

let x, y ϵ X and s,t ϵ R

it t ≤ ||x|| or s≤ ||y|| or both then

$$N(x + y, t + s) \geq N(x, t) * N(y, s)$$

Holds obviously.

Let t > ||x|| or s> ||y|| then

$$N(x + y, t + s) = \frac{t+s-\|x+y\|}{t+s+\|x+y\|}$$

$$\geq \frac{t+s-\|x\|-\|y\|}{t+s+\|x\|+\|y\|}$$

$$\geq \min\left\{\frac{t-\|x\|}{t+\|x\|}, \frac{s-\|y\|}{s+\|y\|}\right\}$$

$$\geq N(x, t) * N(y, s)$$

Hence $(X, N, *)$ is a **fuzzy normed linear space**

DEFINITION 2.2

- Limit of a sequence in a fuzzy normed linear space(X,N *) if exist is unique.

- Every convergent sequence is a Cauchy sequence.

LEMMA 2.1

Let (X,N,*) be a fuzzy normed linear space and $\{x_n\}$ be a convergent sequence with converges to x in X then any subsequnces$\{x_{n_k}\}$ also converges to x.

THEOREM 2.1

If N is a normed linear space, Then the norm $\| \ \| : N \rightarrow R$ is a **continuous function on** N

PROOF

Given that, N is a normed linear space.

To prove that : The norm is a continuous function on N

It is enough to prove that,

$$x_n \rightarrow x \quad \text{implies that} \quad \| X_n \| \rightarrow \| X \|$$

we know that,

$$(\| X_n \| - \| X \|) \leq \| X_n - X \| \ldots\ldots\ldots\ldots(1)$$

Since, $x_n \rightarrow x$ given $\epsilon > 0$ $\exists$ a positive integer $n_0 \ni \|x_n - x\| < \epsilon$

For every $n \geq n_0 \ldots\ldots(2)$

Substitute(2)in(1).

$$(\|x_n\| - \|x\|) < \epsilon \text{ for every } n \geq n_0$$

$$\therefore \|x_n\| \rightarrow \|x\| \ .$$

Therefore the **norm is a continuous function** on N.

THEOREM 2.2

If N is a normed linear space Then $|\,\|x\| - \|y\|\,| \leq \|x - y\|$ for every $x, y \in N$

PROOF:

Consider, $\|x\| = \|x - y + y\|$

$$\leq \|x - y\| + \|y\|$$

therefore $\|x\| - \|y\| \leq \|x - y\|$ .... (1)

Now,

$$-(\|x\| - \|y\|) = \|y\| - \|x\|$$

$$\leq \|y - x\| \qquad \text{By eqn (1)}$$

$$\leq \|-1\,(x - y)\|$$

$$\leq |-1|\,\|x - y\|$$

$$\leq \|x - y\|$$

therefore

$$-(\|x\| - \|y\|) \leq \|x - y\| \qquad .... (2)$$

from (1) and (2)

$$|\,\|x\| - \|y\|\,| \leq \|x - y\|, \ \forall \ x, y \in N.$$

Hence the given condition is proved.

THEOREM 2.3

If $A : \mathcal{H} \to \mathcal{H}$ is a bounded linear operator, Then $A^* \in B(\mathcal{H})$.

Furthermore, $\|A\| = \|A^*\|$

PROOF

we first show that: A* is a bounded linear operator.

Note that,

$$<u, A^*(\alpha u + \beta w)> \; = \; <Au, \alpha u + \beta w>$$

$$= \overline{\alpha} <Au, v> + \overline{\beta} <Au, w>$$

$$= \overline{\alpha} <u, A^*v> + \overline{\beta} <u, A^*w>$$

$$= <u, \alpha A^*u + \beta A^*w>$$

And

hence A^* is **linear.**

now,

$$\|A^*u\|^2 \; = \; <A^*u, A^*u>$$

$$= <AA^*u, u>$$

$$\leq \|A\| \|A^*u,\| \|u\|$$

And hence, $\|A^{*u}\| \leq \|A\| \|u\|$

That is $\|A^*\| \leq \|A\|$ .... (1)

Similarly,

$$\|(A^*)^*\| \leq \|A^*\|$$

Now using the fact $(A^*)^* = A$

It follows that,

$$\|A\| \le \|A^*\| \quad \ldots\ldots\ldots\ldots\ldots(2)$$

From (1) and (2) we get

$$\|A\| = \|A^*\|$$

Therefore $\|A\| = \|A^*\|$

LEMMA 2.2

Let $(X, N, *)$ be a fuzzy normed linear space and $M \subseteq X$. Then f-$\overline{M}$= M$\cup$ M′

PROOF

Let $x \in M \cup \mathbf{M}'$

case1:

If $x \in M$,

Then we choose a sequence x_n with $x_n = x$, $\forall\ n \in N$, and

$$\lim_{n \to \infty} N(x_n - x, t) = \lim_{n \to \infty} N(0, 1) = 1, \quad \forall\ t > 0 \text{ therefore } x \in \text{f-}\overline{M}$$

case2:

when $x \in M'$

Suppose $t' > 0$ be given,

Then for each $\alpha_n \in (0, 1)$ with $\lim_{n \to \infty} \alpha_n = 0$

$\exists$ an open ball $B(x, \alpha_n, t') \cap M$ contains a point other than x.

Then $\exists\ y_n \in B(x, \alpha_n, t') \cap M, \forall\ n \in N$

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$\Rightarrow N(y_n - x, t') > 1 - a_n, \; \forall \; n \in \mathscr{N}$

$\therefore \; \lim_{n \to \infty} N(y_n - x, t') = 1$

Since $t' > 0$ be arbitrary so,

$\lim_{n \to \infty} N(y_n - x, t) = 1, \; \forall \; t > 0$

Therefore $x \in$ f-$\overline{M}$

$M \cup M' \subseteq$ f-$\overline{M}$

Again,

Let $x \in$ f-$\overline{M}$

Then $\exists$ a sequence x_n in M Such that,

$\lim_{n \to \infty} N(x_n - x, t) = 1, \; \forall, \; t > 0$

so for each $a \in (0, 1)$ and $t > 0 \; \exists \; N \in \mathscr{N}$ such that,

$N(x_n - x, t) > 1 - a, \; \forall \; n \geq N$

Now,

$N(x_N - x, t) > 1 - a$ and $x_N \in M$

$\Rightarrow B(x, a, t) \cap M$ contains a point

Then $x, \; \forall \; a \in (0, 1)$ and $t > 0$

$x \in M'$

$$x \in M \cup M'$$

Thus $f - \overline{M} \subseteq M \cup M'$

$$\therefore f - \overline{M} = M \cup M'$$

Hence the proof.

PROPOSITION 2.1

Let $(X, N, *)$ be a fuzzy normed linear space and $\{x_n\}$ be a Cauchy sequence in $(X, N, *)$ iff it is Cauchy sequence in (X, q^*).

PROOF

Let $\{x_n\}$ be a cauchy sequence in X.

Then $\lim\limits_{n \to \infty} N(x_{n+p} - x_n, t) = 1 \ \forall \ t > 0$, $\forall \ p = 1, 2, 3, \ldots$

$\Leftrightarrow$ for each $\alpha \in [0, 1)$ $\exists$ a positive integer $n_0(\alpha, t)$ such that,

$$N(x_{n+p} - x_n, t) > \alpha \ \forall n \geq n_0(\alpha, t) \ \forall \ p = 1, 2, 3, \ldots$$

$\Leftrightarrow |(x_{n+p} - x_n)|_\alpha = 0 \ \forall \ p = 1, 2, 3, \ldots$

$\Leftrightarrow \{x_n\}$ is a Cauchy sequence in (X, q^*).

PROPOSITION 2.2

If $(X, N, *)$ be a complete fuzzy normed linear space then (X, q^*) is a complete generating space of $*$-quasi norm family.

LEMMA 2.3

Let $(X, N, *)$ be a fuzzy normed linear space and A be a subset of X. Then for each sequence x_n in $\overline{A}$, $\exists$ a sequence y_n in A such that

$$\lim_{n \to \infty} N(x_n - y_n, t) = 1, \forall t > 0.$$

PROOF

Let x_n be a sequence in $\overline{A}$ and let $t' > 0$ be Given

Then for a sequence $\{\epsilon_n\}$ with $\epsilon_n \to 0$ as $n \to \infty$, $\exists$ a sequence $\{y_n\}$ in A

such that

$$N(x_n - y_n, t') > 1 - \epsilon_n$$

$$\Rightarrow \lim_{n \to \infty} N(x_n - y_n, t') \geq 1 - \lim_{n \to \infty} \epsilon_n$$

$$\Rightarrow \lim_{n \to \infty} N(x_n - y_n, t') = 1$$

Since $t' > 0$ is arbitrary.

$$\lim_{n \to \infty} N(x_n - y_n, t) = 1, \forall t > 0$$

Therefore, for each sequence x_n in $\overline{A}$, there exists a sequence y_n in A.

PROPOSITION 2.3

Every proper subspace of a normed space has empty interior.

PROOF

Let Y be a proper subspace of a normed space $(X, \|.\|)$.

Assume on the contrary that, int $Y \neq \emptyset$. Then there exist an element $a \in Y$ and an open ball

$B(a, \delta) \subset Y$ for some $\delta > 0$. Then for each $0 \neq x \in X$, We have

$$Y = a + \frac{\delta}{2} \frac{x}{\|x\|} \in B(a; \delta),$$

i.e. $\|y - a\| = \delta/2 < \delta$

Which show that y ϵ Y and

$$\therefore \quad \frac{2}{\delta}(y\text{-}a)\ \|\ x\ \| = x\ \epsilon\ Y$$

Thus every x ϵ X is a point of Y, contradicting the assumption that Y is proper subspace of X.

COROLLARY 2.1

Let V be a normed space and Y ⊂ V, a linear subspace. Then the closure $\bar{Y}$ is a closed linear subspace of V.

PROOF

Let Y be a subspace of V.

We show that : $\bar{Y}$ is a linear subspace.

For this , we let x, y ϵ $\bar{Y}$ and λ ϵ F. then there exists a sequences $\{x_n\}$ and $\{y_n\}$ in Y such that $x_n \to x$ and $y_n \to y$ it follows that

$$\lambda x_n + y_n \to \lambda x + y$$

since Y is a linear subspace we have $\lambda x_n + y_n \epsilon \bar{y}$ and therefore $\bar{y}$ is a subspace of V.

LEMMA 2.4

Let $(X, N, *)$ be a fuzzy normed linear space and $*$ be lower semicontinuous.

If $A \subseteq X$ is bounded then $f - \bar{A}$ is also bounded.

Proof:

Let $\beta \in (0, 1)$

By lower semi continuity of $*$, there exists $\alpha_0 \in (0, 1)$ such that

$$(1 - \alpha_0) * (1 - \alpha_0) > 1 - \beta$$

Now,

let $x \in f - \bar{A}$.

Then $\exists$ a sequence $\{x_n\}$ in A such that

$$\lim_{n \to \infty} N(x_n - x, t) = 1 \quad \forall \ t > 0 \qquad \text{----------} \quad (1)$$

Since A is bounded so for $\alpha_0 \in (0, 1)$, $\exists$ $t_0 > 0$ such that,

$$N(x_n, t_0) > 1 - \alpha_0 \quad \forall \ n \in N$$

Again from,

$$(1) \Rightarrow N(x_n - x, t_0) > 1 - \alpha_0, \ \forall \ n \geq n_0 (\alpha_0, t_0)$$

Now,

$$N(x, 2t_0) \geq N(x_{n_0} - x, t_0) * N(x_{n_0}, t_0) > (1 - \alpha_0) * (1 - \alpha_0) > 1 - \beta$$

$$N(x, t') > 1 - \beta. \text{ Where } 2t_0 = t' > 0.$$

Since $\beta \in (0, 1)$ is arbitrary

Thus for each $\beta \in (o, 1)$, $\exists \ t'(\beta) > 0$ Such that,

$$N(x, t') > 1 - \beta$$

$\therefore f \bar{A}$ is bounded.

Hence the proof

DEFINITION:2.3

Let $n \in N$ (natural numbers) and let X be a real vector space of dimension $d \geq n$. (Here we allow d to be infinite.) A real-valued function $\|\bullet, \ldots, \bullet\|$ on $\underbrace{X \times \ldots \ldots \times X}_{n}$ satisfying the following four properties

(1) $\|x_1, x_2, \ldots, x_n\| = 0$ if any only if $x_1, x_2, \ldots, x_n$ are linearly dependent,

(2) $\|x_1, x_2, \ldots, x_n\|$ is invariant under any permutation,

(3) $\|x_1, x_2, \ldots, \alpha x_n\| = |\alpha| \|x_1, x_2, \ldots, x_n\|$ for any $\alpha \in R$ (real),

(4) $\|x_1, x_2, \ldots, x_{n-1}, y + z\| \leq \|x_1, x_2, \ldots, x_{n-1}, y\| + \|x_1, x_2, \ldots, x_{n-1}, z\|$,

is called an n-norm on X and the pair $(X, \|\bullet, \ldots, \bullet\|)$ is called an **n-normed** space.

EXAMPLE

Let $(X, \|\bullet, \bullet, \ldots, \bullet\|)$ be an n- normed space as in previous proposition. define

$$N(x_1, x_2, \ldots, x_n, t) = \begin{cases} \dfrac{t}{t + \|x_1, x_2, \ldots x_n\|}, & t > 0 \, t \in R, (x_1, x_2, \ldots, x_n) \in \underbrace{X \times \ldots \times X} \\ \\ 0 & \text{when } t \leq 0 \end{cases} \quad (1)$$

Then (X, N) is an f-n-NLS.

THEOREM 2.4

let (V,N) be a fuzzy normed linear space. Then the following assertions are equivalent.

1.(V,N) statisfying (N6)

2. There exists a fuzzy inner product (V,m) satisfying N as induced norm.

PROOF

$\Rightarrow$ let (V,N) be a fuzzy normed linear space satisfying (N6).define a function m: $V \times V \times R \to [0,1]$ BY

$$M(kx,y,r) = \begin{cases} \dfrac{N(kx,r)+N(ky,r)}{2} & \text{if } r \geq 0 \text{ and } k > 0, \\[2mm] 1 - \dfrac{N(kx,r)+N(ky,r)}{2} & \text{if } r \geq 0 \text{ and } k < 0, \\[2mm] 0 & \text{if } r \leq 0 \end{cases}$$

To check the condition of FIP- space definition we only examine the condition (FIP-5) the other conditions clearly holds.

In (FIP-5) ,let $x,y,z \in v$ $t,s \in R^+$,

$$m(x+y,z,r+s) = \frac{N(x,r)+N(y,r)}{2} \geq \frac{1}{2}\min\{N(x,r),N(y,s)\} + \frac{1}{2}N(z,r+s)$$

$$\geq \frac{1}{2}\min\{N(x,r),N(y,s)\} + \frac{1}{2}\min\{N(z,r),N(z,s)\}$$

$$\geq \min\{\frac{N(x,r)+N(z,r)}{2}, \frac{N(y,s)+N(z,s)}{2}\}$$

$$= \min\{m(x,z,r),m(y,z,s)\}.$$

To show FIP-7 assume that s,r>0 and s≤r then $s^2 \leq rs$ and since $N(x, .)$ is a non decreasing function $\mathbb{R}$ we have $N(x,sr) \geq N(s^2)$. this follows that

$$m(x,y,sr) = \frac{N(x,sr)+N(y,sr)}{2} \geq \frac{N(x,s^2)+N(y,s^2)}{2}$$

$$\geq m(x,y,s^2) \wedge m(x,y,r^2)$$

The other cases $r \leq s$ can be proved similarly. Therefore $m(x,y,r)$ satisfying in all conditions of definition FIP – space and also conditions then we have to induced norm of m and

$$M(cx,r) = m(|c|x,|c|x,r^2)$$

Conversely ,

Suppose that there exist a fuzzy inner product on V satisfying (FIP-7)(FIP-8) we show that induced fuzzy norm satisfying (N6) since (V,m) satisfy(FIP-7) the induced fuzzy norm N of m given by :

$$N(kx,r)= \begin{cases} m(|k|x,|k|x,t^2) & \text{if } r > 0, \\ 0 & \text{otherwise.} \end{cases}$$

Now (FIP-8) gives $\{\forall r>0; m(|c|x,|c|x,r^2)\} \Rightarrow x=0$.

Therefore $\{\forall r>0; N(x,r) = m(|c|x,|c|x,r^2)\} \Rightarrow x=0$. That is N satisfy (N6).

CHAPTER - III

FUZZY CONTINUOUS MAPPINGS IN FUZZY NORMED LINEAR SPACES.

THEOREM 3.1

Let $(X, N, *)$ be a Fuzzy Normed Linear Space. Then (X, τ_N) is a metrizable topological vector space.

PROOF

First we have to show that the mappings are continuous.

Let $x_n \to x$, $y_n \to y$

We have,

$$N((x_n+y_n)-(x+y),t) \geq N(x_n\text{-}x,\tfrac{t}{2})* N(y_n\text{-}y,\tfrac{t}{2}) \to 1$$

Thus $x^n+y_n^n \to x+\lambda_n y+\lambda$ we have

$$N(\lambda_n x_n\text{-}\lambda_x,t) = N(\lambda_n(x_n\text{-}x)+x(\lambda_n\text{-}\lambda),t)$$

$$\geq N(\lambda_n(x_n - x),\tfrac{t}{2})*N(x(\lambda_n\text{-}\lambda),\tfrac{t}{2})$$

$$=N(x_n\text{-}x,\tfrac{t}{2|\lambda_n|})*(N(x,\tfrac{t}{|\lambda_n-\lambda|}) \to 1$$

This implies that $\lambda_n x_n \to \lambda_x$.

$\therefore (x,T_N)$ is a topological vector space.

Then we have that X is fuzzy metrizable.

$\therefore$ X is metrizable.

PROPERTY 3.1

Let $(X, N, *)$ be a FNLS and

$$P_\alpha(x) := \inf\{t > 0 : N(x, t) > \alpha\}, \alpha \in (0, 1).$$

Then, for $x \in X$, $s > 0$, $\alpha \in (0, 1)$, we have:

$$P_\alpha(x) < s \text{ if and only if } N(x, s) > \alpha.$$

THEOREM 3.2

Let $(X, N, *)$ be a FNLS and For $x \in X$, $r \in (0, 1)$, $t > 0$ we define the open ball

$$B(x, r, t) := \{y \in X : N(x - y, t) > r\}.$$

Then $\tau_N := \{T \subset X : x \in T \text{ iff } (\exists)t > 0, r \in (0, 1) : B(x, r, t) \subseteq T\}$ is a topology on X.

Moreover, if the t-norm $*$ satisfies sup $x \in (0,1)$ $x * x = 1$, then (X, τ_N) is Hausdorff.

THEOREM 3.3

A mapping $T : X \to Y$ is fuzzy continuous at $x_0 \in X$, if and only if

$$(\forall)(x_n) \subseteq X, x_n \to x_0, \text{ we have that } T(x_n) \to T(x_0).$$

Remark : If T is uniformly fuzzy continuous, then T is fuzzy continuous.

THEOREM 3.4 (Uniform continuity theorem)

Let $(X, N_1, *_1)$ be a compact FNLS and $(Y, N_2, *_2)$ be a FNLS. If $T : X \rightarrow Y$ is a fuzzy continuous mapping, then T is uniformly fuzzy continuous.

PROOF

Let $\varepsilon > 0$ and $\alpha \in (0, 1)$.

As $\sup_{x \in (0,1)} x *_2 x = 1$, then there exists $\alpha_0 \in (0, 1)$ such that

$$\alpha_0 *_2 \alpha_0 > \alpha.$$

As $T : X \rightarrow Y$ is a fuzzy continuous on X, for all $x \in X$, there exist

$$\delta_x = \delta(\tfrac{\varepsilon}{2}, \alpha_0, x > 0, \beta_x = \beta(\tfrac{\varepsilon}{2}, \alpha_0, x \in (0, 1) \text{ such that}$$

$$(\forall)y \in X : N_1(x - y, \delta_x) > \beta_x \Rightarrow N_2(T(x) - T(y), \tfrac{\varepsilon}{2}) > \alpha_0.$$

As $\sup_{x \in (0,1)} x *_1 x = 1$, we can take $\gamma_x > \beta_x$ such that $\gamma_x *_1 \gamma_x > \beta_x$.

Since X is compact and $\{ B(x, \gamma_x, \tfrac{\delta_{x_i}}{2}) \}_{x \in X}$ is an open covering of X, there exist

$$x_1, x_2, \cdots, x_n \text{ in X such that } X = \bigcup_{i=1}^{n} B(x_i, \gamma_{x_i}, \tfrac{\delta_{x_i}}{2}).$$

Let $\beta = \max\{\gamma_{x_i}\}$ and $\delta = \min\{\tfrac{\delta_{x_i}}{2}\}$, for $i = 1, 2, \cdots, n$.

Let $x, y \in X$ arbitrary, such that $N_1(x - y, \delta) > \beta$. As $x \in X$, there exists

$i \in \{1, 2, \cdots, n\}$ such that $x \in B(x_i, \gamma_{x_i}, \tfrac{\delta_{x_i}}{2})$, namely $N_1(x-x_i, \tfrac{\delta_{x_i}}{2}) > \gamma_{x_i}$.

Hence

$$N_1(x - x_i, \delta x_i) \geq N_1(x-x_i, \tfrac{\delta_{x_i}}{2}) > \gamma_{x_i} > \beta_{x_i}.$$

Thus $N_2(T(x) - T(x_i), \frac{\varepsilon}{2}) > \alpha_0$.

We remark that

$$N_1(v - x_i , \delta x_i) \geq N_1(y-x,\frac{\delta_{x_i}}{2}) *_1 N_1(x - x_i,\frac{\delta_{x_i}}{2})\gamma_{x_i} \geq N_1\left(y - x,\frac{\delta_{x_i}}{2}\right) *_1$$

$$N_1\left(x - x_i, \frac{\delta_{x_i}}{2}\right) > \beta *_1 N_1\left(x - x_{i,}\frac{\delta_{x_i}}{2}\right) > \beta *_1 \gamma_{x_i} \geq \gamma_{x_i} *_1 \gamma_{x_i} > \beta_{x_i}.$$

Thus $N_2(T(x) - T(x_i), \frac{\varepsilon}{2}) > \alpha_0$.

In conclusion

$$N_2(T(x) - T(y), \varepsilon) \geq N_2(T(x) - T(x_i), \frac{\varepsilon}{2}) *_2 > N_2(T(x_i) - T(y), \frac{\varepsilon}{2}) > \alpha_0 *_2 \alpha_0 > \alpha$$

THEOREM 3.5

Let (V,N) be an l –fuzzy complete normed space satisfying(N6) and C be an l-fuzzyclosed,convex and bounded set in V .let $N(x,.)$ is upper semicontinuous for each $x \epsilon V$ .if $f : C \rightarrow C$ is a fuzzy non-expansive mapping on C ,then $F(f_r)$ the set of fixed point of f_r is nonempty where $f_r(x)= rx+ (1-r) f(x); r \epsilon (0,1)$.

Moreover f_s have the same fixed points as of f.

PROOF

since (V,N) is a fuzzy normed space satisfying (N6) ,then we get inner product space satisfying (FIP-7)(FIP-8) induced by (V,N) .since $N(x,.)$ is upper semicontinuous then induced fuzzy inner product $m(x,x,.) = N(x,.)$ is upper semicontinuous.

REMARK

It is clear that a fuzzy Lipschitzian mapping is necessarily fuzzy continuous.

COROLLARY 3.1

A normed space X is banach iff every absolutely convergent series in X is convergent.

PROOF

Assume first that X is a banach space .if the absolute convergence of a series $\sum_{n=1}^{\infty} x_n$ is assumed for some countable sequence $\{x_n\}$, then $\sum_{n=1}^{\infty} \|x_n\| < \infty$.

let $s_n = \sum_{k=1}^{n} x_k$ .now ,since

$$\|s_n - s_m\| = \|\sum_{k=m+1}^{n} x_k\| \leq \sum_{k=m+1}^{n} \|x_k\| \to 0 \text{ as } n > m \to \infty,$$ it follows that the sequence $\{s_n\}$ has a limit in X and hence the series $\sum_{k=1}^{\infty} \|x_k\|$ is convergent

Conversely,

Suppose that X is a normed space and every absolutely convergent series in X is convergent .given a Cauchy sequence $\{x_n\}$ we can choose an increasing subsequence

$\{n_k\}_{k \in \mathbb{N}}$ of positive integers such that

$$\|x_n - x_m\| \leq 2^{-k} \text{ as } n,m \geq n_k$$

Thus ,the series

$$x_{n_1} + (x_{n_2} - x_{n_1}) + (x_{n_3} - x_{n_2}) + \ldots\ldots$$

Converges to some x

$$\|x_{n_1} + (x_{n_2} - x_{n_1}) + (x_{n_3} - x_{n_2}) + \ldots\ldots\| \leq \|x_{n_1}\| + \sum_{k=1}^{\infty} 2^{-k} < \infty$$

So that ,

$$x_{n_1} + \sum_{k=1}^{\infty} (x_{n_{k+1}} - x_{n_k})$$

Is summable absolutely, and therefore converges (by hypothesis) as the kth partial sum of this series is x_{n_k}, we have $x_{n_k} \to x$ since $\{x_n\}$ is Cauchy and has a convergent subsequence $\{x_{n_k}\}$ which converges to x. $x_n \to x$ and the space is complete.

THEOREM 3.6(Banach's contraction principle).

Let $(X, N, *)$ be a fuzzy Banach space and $T : X \to X$ be a fuzzy contraction. Then T has a unique fixed point $z \in X$ and

$$\lim_{n \to \infty} T^n(x) = z, (\forall)x \in X .$$

PROOF

Let $x \in X$ be arbitrary.

Then $\{T^n(x)\}$ is a Cauchy sequence. Indeed, for $t > 0$ and $p \in N^*$,

we have

$$N(T^{n+p}(x) - T^n(x), t) \geq N(T^{n+p-1}(x) - T^{n-1}(x), \tfrac{t}{L}) \geq \ldots \ldots \geq N(T^p(x) - x, \tfrac{t}{L^n}).$$

As $L \in (0, 1)$, we have that,

$$\lim_{n \to \infty} \frac{t}{L^n} = \infty.$$

Thus $\lim_{n \to \infty} N(T^p(x) - x, \tfrac{t}{L^n})$.

Hence $\lim_{n \to \infty} N(T^{n+p}(x) - T^n(x), t) = 1$

namely $\{T^n(x)\}$ is a Cauchy sequence.

Since X is complete, we have that $\{T^n(x)\}$ is a convergent sequence.

Thus $(\exists)z \in X$ such that

$$\lim_{n \to \infty} T^n(x) = z.$$

We note that

$$z = \lim_{n \to \infty} T^{n+1}(x) = \lim_{n \to \infty} T(T^n(x)) = T(z).$$

Now we show that : **uniqueness.**

Suppose that there exist z, y ∈ X, z ≠ y with the property

$$z = T(z), \quad y = T(y).$$

As z ≠ y, there exists s > 0 such that

$$N(z - y, s) = a < 1.$$

Then, for all n ∈ N, we have

$$a = N(y - z, s) = N(T^n(y) - T^n(z), s)$$

$$\geq N\left(y - z, \frac{s}{L^n}\right) \to 1.$$

Thus a = 1,

which contradicts our assumption.

Hence completes the proof.

THEOREM 3.7

Let T : X → Y be a linear operator. Then T is fuzzy continuous on X, if and only if T is fuzzy continuous at a point $x_0 \in X$.

PROOF

" ⇒ " It is obvious.

" ⇐ " Let y ∈ Y be arbitrary.

We will show that: **T is fuzzy continuous at y.**

Let $\varepsilon > 0$, $\alpha \in (0, 1)$. Since T is fuzzy continuous at $x_0 \in X$, there exist $\delta > 0$, $\beta \in (0, 1)$ such that

$$(\forall)x \in X : N_1(x - x_0, \delta) > \beta \Rightarrow N_2(T(x) - T(x_0), \epsilon) > \alpha .$$

Replacing x by $x + x_0 - y$, we obtain that

$$(\forall)x \in X : N_1(x + x_0 - y - x_0, \delta) > \beta \Rightarrow N_2(T(x + x_0 - y) - T(x_0), \epsilon) > \alpha ,$$

Namely

$$(\forall)x \in X : N_1(x - y, \delta) > \beta \Rightarrow N_2(T(x) - T(y), \epsilon) > \alpha .$$

Thus T is fuzzy continuous at $y \in Y$. As y is arbitrary, it follows that T is fuzzy continuous on D(T).

COROLLARY 3.2

Let $T : X \to Y$ be a linear operator. Then T is fuzzy continuous on X, if and only if

$$(\forall)\varepsilon > 0, (\forall)\alpha \in (0, 1), (\exists)\delta = \delta(\epsilon, \alpha) > 0, (\exists)\beta = \beta(\epsilon, \alpha) \in (0, 1) \text{such that}$$

$$(\forall)x \in X : N_1(x, \delta) > \beta \text{ we have that } N_2(T(x), \varepsilon) > \alpha .$$

THEOREM 3.8

A linear operator $T : X \to Y$ is fuzzy continuous on X, if and only if

$$(\forall)\alpha \in (0, 1), (\exists)\beta = \beta(\alpha) \in (0, 1), (\exists)M = M(\alpha) > 0 \text{ such that}$$

$$(\forall)t > 0, (\forall)x \in X : N_1(x, t) > \beta \Rightarrow N_2(T(x), M t) > \alpha .$$

PROOF

"$\Leftarrow$" Let $\varepsilon > 0$, $\alpha \in (0, 1)$ be arbitrary. Then there exist $\beta = \beta(\alpha) \in (0, 1)$, $M = M(\alpha) > 0$ such that

$$(\forall)t > 0, (\forall)x \in X : N_1(x, t) > \beta \Rightarrow N_2(T(x), M t) > \alpha .$$

In particular, for $t = \frac{t}{M}$, we obtain $N_2(x, \frac{t}{M})$ [illegible]

Applying Corollary 3.2, for δ = [illegible] we obtain that f is fuzzy continuous [illegible]

" $\Rightarrow$ " We suppose that $(\exists) \alpha_0 \in (0, 1)$ such that

$(\forall)\beta \in (0, 1),(\forall)M > 0,(\exists)t_0 = t_0(\beta, M) > 0,(\exists)x_0 = x_0(\beta, M) \in X,$

$$N_1(x_0, t_0) > \beta \text{ and } N_2(T(x), M\, t_0) \leq \alpha_0$$

The set $V_0 = \{y \in Y : N_2(y, t_0) > \alpha_0\}$ is an open neighborhood of 0_Y. We will prove that, for all neighborhood U of 0_X, we have $T(U) \not\subseteq V_0$, which contradicts the fuzzy continuity of T at 0_X

As $\{B(0, \beta, s)\}_{\beta \in (0,1), s>0}$ is a fundamental system of neighborhoods of 0_X, it is enough to show that for all $\beta \in (0, 1)$, $s > 0$ we have $T(B(0, \beta, s)) \not\subseteq V_0$.

As $M > 0$ is arbitrary, we can chose $s = \frac{t_0}{M}$. We note that, for $z_0 = \frac{1}{M}x_0 \in X$ we have

$$N_1(z_0, \frac{t_0}{M}) = N_1(\frac{1}{M}x_0, \frac{t_0}{M}) = N_1(x_0, t_0) > \beta$$

Hence $z_0 \in B(0, \beta, \frac{t_0}{M})$

We will prove that $T(z_0) \not\in V_0$, namely $N_2(T(z_0), t_0) \leq \alpha_0$. Indeed,

$$N_2(T(z_0), t_0) = N_2(T(\frac{1}{M}x_0), t_0) = N_2(T(x_0), M\, t_0) \leq \alpha_0.$$

COROLLARY 3.3

A linear functional $f : (X, N_1, *) \rightarrow (C, N, \wedge)$ is fuzzy continuous, iff a

$(\exists)\beta \in (0, 1),(\exists)M > 0$ such that

$(\forall)t > 0,(\forall)x \in X, N_1(x, t) > \beta \Rightarrow |f(x)| < M\, t.$

In particular, for $t = \frac{\varepsilon}{M}$, we obtain $N_1(x, \frac{\varepsilon}{M}) > \beta \Rightarrow N_2(T(x), \varepsilon) > \alpha$.

Applying Corollary 3.2, for $\delta = \frac{\varepsilon}{M} > 0$, we obtain that T is fuzzy continuous on X.

" $\Rightarrow$ " We suppose that $(\exists)\alpha_0 \in (0, 1)$ such that

$$(\forall)\beta \in (0, 1), (\forall)M > 0, (\exists)t_0 = t_0(\beta, M) > 0, (\exists)x_0 = x_0(\beta, M) \in X,$$

$$N_1(x_0, t_0) > \beta \text{ and } N_2(T(x), M t_0) \leq \alpha_0.$$

The set $V_0 = \{y \in Y : N_2(y, t_0) > \alpha_0\}$ is an open neighborhood of 0_Y. We will prove that, for all neighborhood U of 0_X, we have $T(U) \nsubseteq V_0$, which contradicts the fuzzy continuity of T at 0_X

As $\{B(0, \beta, s)\}_{\beta \in (0,1), s > 0}$ is a fundamental system of neighborhoods of 0_X, it is enough to show that for all $\beta \in (0, 1)$, $s > 0$ we have $T(B(0, \beta, s)) \nsubseteq V_0$.

As $M > 0$ is arbitrary, we can chose $s = \frac{t_0}{M}$. We note that, for $z_0 = \frac{1}{M}x_0 \in X$, we have

$$N_1(z_0 \frac{t_0}{M}) = N_1(\frac{1}{M}x_0, \frac{t_0}{M}) = N_1(x_0, t_0) > \beta$$

Hence $z_0 \in B(0, \beta, \frac{t_0}{M})$

We will prove that $T(z_0) \notin V_0$, namely $N_2(T(z_0), t_0) \leq \alpha_0$. Indeed,

$$N_2(T(z_0), t_0) = N_2(T(\frac{1}{M}x_0), t_0) = N_2(T(x_0), M t_0) \leq \alpha_0.$$

COROLLARY 3.3

A linear functional $f : (X, N_1, *) \rightarrow (C, N, \wedge)$ is fuzzy continuous, iff a

$(\exists)\beta \in (0, 1), (\exists)M > 0$ such that

$$(\forall)t > 0, (\forall)x \in X, N_1(x, t) > \beta \Rightarrow |f(x)| < M t.$$

In particular, for $t = \frac{\varepsilon}{M}$, we obtain $N_1(x, \frac{\varepsilon}{M}) > \beta \Rightarrow N_2(T(x), \varepsilon) > \alpha$.

Applying Corollary 3.2, for $\delta = \frac{\varepsilon}{M} > 0$, we obtain that T is fuzzy continuous on X.

" $\Rightarrow$ " We suppose that ($\exists \alpha_0 \in (0, 1)$) such that

$$(\forall \beta \in (0, 1))(\forall M > 0)(\exists t_0 = t_0(\beta, M) > 0)(\exists x_0 = x_0(\beta, M) \in X,$$

$$N_1(x_0, t_0) > \beta \text{ and } N_2(T(x), M\, t_0) \leq \alpha_0 .$$

The set $V_0 = \{y \in Y : N_2(y, t_0) > \alpha_0\}$ is an open neighborhood of 0_Y. We will prove that, for all neighborhood U of 0_X, we have $T(U) \not\subset V_0$, which contradicts the fuzzy continuity of T at 0_X.

As $\{B(0, \beta, s)\}_{\beta \in (0,1), s > 0}$ is a fundamental system of neighborhoods of 0_X, it is enough to show that for all $\beta \in (0, 1), s > 0$ we have $T(B(0, \beta, s)) \not\subset V_0$.

PROOF

We know that f is fuzzy continuous if and only if

$$(\forall)\alpha \in (0, 1),(\exists)\beta \in (0, 1),(\exists)M > 0 \text{ such that}$$

$$(\forall)t > 0,(\forall)x \in X : N_1(x, t) > \beta \Rightarrow N(f(x), M\,t) > \alpha .$$

But

$$N(f(x), M\,t) > \alpha \Leftrightarrow N(f(x), M\,t) = 1 \Leftrightarrow |f(x)| < M\,t .$$

Hence $(\exists)\beta \in (0, 1),(\exists)M > 0$ such that

$$(\forall)t > 0,(\forall)x \in X, N_1(x, t) > \beta \Rightarrow |f(x)| < M\,t .$$

hence the proof.

COROLLARY 3.4

Let $(X, N_1, *_1)$, $(Y, N_2, *_2)$ be fuzzy normed linear spaces and

$$p_\alpha(x) := \inf \{t > 0 : N_1(x, t) > \alpha\}, \alpha \in (0, 1),$$

$$q_\alpha(x) := \inf \{t > 0 : N_2(x, t) > \alpha\}, \alpha \in (0, 1).$$

A linear operator $T : X \to Y$ is fuzzy continuous on X if and only if

$$\forall \alpha \in (0, 1), \exists \beta = \beta(\alpha) \in (0, 1), \exists M = M(\alpha) > 0$$

such that $q_\alpha(Tx) \le Mp_\beta(x), \forall x \in X.$

PROOF

We known that,

$$\forall \alpha \in (0, 1), \exists \beta = \beta(\alpha) \in (0, 1), \exists M = M(\alpha) > 0$$

such that

$$\forall t > 0, \forall\ x \in X : N_1(x, t) > \beta \Rightarrow N_2(T(x), Mt) > \alpha.$$

Thus, for $x \in X$, we have

$$\{t > 0 : N_1(x, t) > \beta\} \subseteq \{t > 0 : N_2(Tx, Mt) > \alpha\}.$$

Hence, $\inf\{t > 0 : N_1(x, t) > \beta\} \geq \inf\{t > 0 : N_2(Tx, Mt) > \alpha\}$

$$\inf\{t > 0 : N_1(x, t) > \beta\} \geq \inf\{\frac{t}{M} > 0 : N_2(Tx, t) > \alpha\}.$$

Therefore $p_\beta(x) \geq \frac{1}{M} q_\alpha(Tx) \forall x \in X$

<p style="text-align:center">Hence the proof</p>

COROLLARY 3.5

Let $(X, N_1, *_1)$, $(Y, N_2, *_2)$ be FNLSs and

$$p_\alpha(x) := \inf\{t > 0 : N_1(x, t) > \alpha\}, \alpha \in (0, 1),$$

$$q_\alpha(x) := \inf\{t > 0 : N_2(x, t) > \alpha\}, \alpha \in (0, 1).$$

A linear operator $T : X \to Y$ is fuzzy continuous on X if and only if

$$(\forall)\alpha \in (0, 1), (\exists)\beta = \beta(\alpha) \in (0, 1), (\exists)M = M(\alpha) > 0 \text{ such that}$$

$$q_\alpha(Tx) \leq M\, p_\beta(x), (\forall)x \in X$$

PROOF

We know that,

$$(\forall)\alpha \in (0, 1), (\exists)\beta = \beta(\alpha) \in (0, 1), (\exists)M = M(\alpha) > 0 \text{ such that}$$

$$(\forall)t > 0, (\forall)x \in X : N_1(x, t) > \beta \Rightarrow N_2(T(x), M\,t) > \alpha.$$

Thus, for $x \in X$, we have

$$\{t > 0 : N_1(x, t) > \beta\} \subseteq \{t > 0 : N_2(Tx, M\,t) > \alpha\}.$$

Hence

$$\inf\{t > 0 : N_1(x, t) > \beta\} \geq \inf\{t > 0 : N_2(Tx, M\,t) > \alpha\},$$

namely $\inf\{t > 0 : N_1(x, t) > \beta\} \geq \inf\{\frac{t}{M} > 0 : N_2(Tx, t) > \alpha\}$. Therefore

$$p_\beta(x) \geq \frac{1}{M}\, q_\alpha(Tx), \forall)x \in X.$$

COROLLARY 3.6

A linear functional $f : (X, N_1, *) \rightarrow (C, N, \wedge)$ is fuzzy continuous, iff

$(\exists)\beta \in (0, 1),(\exists)M > 0$ such that

$$|f(x)| \leq M\, p_\beta(x),(\forall)x \in X.$$

PROPERTY 3.2

Let $T : X \rightarrow Y$ be a linear operator. The following sentences are equivalent:

1. T is fuzzy continuous;

2. T is topological continuous;

3. T is fuzzy bounded;

COROLLARY 3.7

Let (X,N) be a fuzzy normed linear space. Assume further that (N6) $N(x, t) > 0$ for all $t > 0$ implies $x = 0$. Define

$$\|x\|_\alpha = \inf\{t : N(x, t) \geq \alpha\}, \alpha \in (0,1).$$

Then $\{\|\cdot\|_\alpha : \alpha \in (0,1)\}$ is an ascending family of norms on X (or) α-norms on X corresponding to the fuzzy norm on X.

PROPERTY 3.3

Let X be a linear space over a real field F .a fuzzy subset N of $X \times \cdots \cdots \times X \times R$ (R set of real numbers) is called a **fuzzy n-norm** on X iff

$$\underbrace{}_{n}$$

(N1) for all t$\in$R with t $\le$ 0 ,N $(x_1, x_2, \ldots, x_n, t) = 0$

(N2) for all t $\in$ R with t > 0, N $(x_1 x_2 \ldots x_n, t) = 1$ if and only if $x_1, x_2, \ldots, x_n$ are linearly dependent,

(N3) N $(x_1, x_2, \ldots, x_n, t)$ is invariant under any permutation of $x_1, x_2, \ldots, x_n$,

(N4) for all t $\in$ R with t > 0,

$$N(x_1, x_2, \ldots, cx_n, t) = N(x_1, x_2, \ldots, x_n, \frac{t}{|c|}), \text{ if } c \ne 0, c \in F \text{ (field)}$$

(N5) for all s, t $\in$ R,

$$N(x_1, x_2, \ldots, x_n + x_n', s+t) \ge \min \{N(x_1, x_2, \ldots, x_n, s), N(x_1, x_2, \ldots x_n', t)\},$$

(N6) $N(x_1, x_2, \ldots, x_n, \circ)$ is a nondecreasing function of R and

$$\lim_{t \to \infty} N(x_1, x_2, \ldots, x_n, t) = 1.$$

Then (X,N) is called a **fuzzy n-normed linear space** or in short **f-n-NLS**.

THEOREM 3.9

Let (X,N) be an f-n-NLS. Assume the condition that (N7) $N(x_1, x_2, \ldots, x_n, t) > 0$ for all t > 0 implies $x_1, x_2, \ldots, x_n$ are linearly dependent.

Define $\|x_1, x_2, \ldots, x_n\|_\alpha = \inf\{t : N(x_1, x_2, \ldots, x_n, t) \ge \alpha\}, \alpha \in (0,1)$.

Then $\{\|\cdot, \cdot, \ldots, \cdot\|_\alpha : \alpha \in (0,1)\}$ is an ascending family of n-norms on X. These n-norms are called α-n-norms on X corresponding to the fuzzy n-norm on X.

PROOF

(1)$\| x1,x2, \ldots ,xn \|_\alpha = 0$. This

    (i) implies $\inf\{t : N(x_1,x_2, \ldots ,x_n, t) \geq \alpha\} = 0$,

    (ii) implies, for all $t \in R$, $t > 0$, $N(x_1,x_2, \ldots ,x_n, t) \geq \alpha > 0$, $\alpha \in (0,1)$,

    (iii) implies, by (N7), $x_1,x_2, \ldots ,x_n$ are linearly dependent.

Conversely

    assume that $x_1,x_2, \ldots ,x_n$ are linearly dependent. This

        (i) implies, by (N2), $N(x_1,x_2, \ldots ,x_n, t) = 1$ for all $t > 0$,

        (ii) implies, for all $\alpha \in (0,1)$, $\inf\{t : N(x_1,x_2, \ldots ,x_n, t) \geq \alpha\} = 0$,

        (iii) implies $\| x_1,x_2, \ldots ,x_n \|_\alpha = 0$.

(2)   As $N(x_1,x_2, \ldots ,x_n, t)$ is invariant under any permutation, it follows that

        $\| x_1,x_2, \ldots ,x_n \|_\alpha$ is invariant under any permutation.

(3) If $c \neq 0$, then

$$\| x_1,x_2, \ldots, cx_n \|_\alpha = \inf \{s : N(x_1,x_2, \ldots, cx_n, s) \geq \alpha \} \qquad (1)$$

$$= \inf \{ s : N(x_1,x_2, \ldots, x_n, \tfrac{s}{|c|}) \geq \alpha \}$$

Let $t = \dfrac{s}{|c|}$,   then

$$\| x_1,x_2, \ldots, cx_n \|_\alpha = \inf \{|c| t : N(x_1,x_2, \ldots, x_n, t) \geq \alpha \}$$

$$= |c| \inf \{ t : N(x_1,x_2, \ldots, x_n, t) \geq \alpha \} \qquad (2)$$

$$= |c| \| x_1,x_2, \ldots, x_n \|_\alpha$$

If $c = 0$, then

$$\| x_1,x_2, \ldots, cx_n \|_\alpha = \| x_1,x_2, \ldots, 0 \|_\alpha$$

$$= 0 = 0 \| x_1,x_2, \ldots, cx_n \|_\alpha \qquad (3)$$

$$= |c| \| x_1,x_2, \ldots, x_n \|_\alpha \quad \forall c \in F$$

(4) $\qquad \| x_1, x_2, \ldots, x_n \|_\alpha + \| x_1, x_2, \ldots, x_n' \|_\alpha$

$$= \inf \{ t : N(x_1, x_2, \ldots, x_n, t) \geq \alpha \} + \inf \{ s : N(x_1, x_2, \ldots, x_n', s) \geq \alpha \}$$

$$= \inf \{ t+s : N(x_1, x_2, \ldots, x_n, t) \geq \alpha, N(x_1, x_2, \ldots, x_n', s) \geq \alpha \}$$

$$\geq \inf \{ t+s : N(x_1, x_2, \ldots, x_n + x_n', t+s) \geq \alpha \} \qquad (4)$$

$$\geq \inf \{ r : N(x_1, x_2, \ldots, x_n + x_n', r) \geq \alpha \}, \ r=t+s$$

$$\| x_1, x_2, \ldots, x_n + x_n' \|_\alpha$$

$\therefore \| x_1, x_2, \ldots, x_n \|_\alpha + \| x_1, x_2, \ldots, x_n' \|_\alpha \leq \| x_1, x_2, \ldots, x_n \|_\alpha + \| x_1, x_2, \ldots, x_n' \|_\alpha$

Thus $\{ \| ., ., \ldots, . \|_\alpha : \alpha \in (0,1) \}$ is an α-n-norm on X.

Let $0 < \alpha_1 < \alpha_2$. Then

$$\| x_1, x_2, \ldots, x_n \|_\alpha = \inf \{ t : N(x_1, x_2, \ldots, x_n, t) \geq \alpha_1 \},$$

$$(5)$$

$$\| x_1, x_2, \ldots, x_n \|_{\alpha 2} = \inf \{ t : N(x_1, x_2, \ldots, x_n, t) \geq \alpha_2 \},$$

As $\alpha_1 < \alpha_2$,

$$\{ t : N(x_1, x_2, \ldots, x_n, t) \geq \alpha_2 \} \subset \{ t : N(x_1, x_2, \ldots, x_n, t) \geq \alpha_1 \}, \qquad (6)$$

$$\Rightarrow \inf \{ t : N(x_1, x_2, \ldots, x_n, t) \geq \alpha_2 \} \geq \inf \{ t : N(x_1, x_2, \ldots, x_n, t) \geq \alpha_1 \}, \qquad (7)$$

which implies

$$(8)$$

$$\| x_1, x_2, \ldots, x_n \|_{\alpha 2} \geq \| x_1, x_2, \ldots, x_n \|_{\alpha 1}$$

Hence $\{ \| ., ., \ldots, . \|_\alpha : \alpha \in (0,1) \}$ is an ascending family of α-n-norms on X

corresponding to the fuzzy n-norm on X.

EXAMPLES

Let $X = R^{n+1}$ be a linear space over R.

Define $\| \bullet, \bullet, \ldots, \bullet \| : \underbrace{X \times \cdots \times X}_{n} \times X \to R$ by

$$\| x_1, x_2, \ldots, x_n \|_1 = \max\{\Delta_1, \Delta_2, \ldots, \Delta_n\},$$

$$\tag{1}$$

$$\| x_1, x_2, \ldots, x_n \|_2 = \frac{1}{2}\max\{\Delta_1, \Delta_2, \ldots, \Delta_n\}$$

Where

$$\Delta_1 = \begin{vmatrix} a_{12} & a_{13} & \cdots & a_{1(n+1)} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n2} & a_{n3} & \cdots & a_{n(n+1)} \end{vmatrix},$$

$$\Delta_2 = \begin{vmatrix} a_{13} & \cdots & a_{1(n+1)} & a_{11} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n3} & \cdots & a_{n(n+1)} & a_{n1} \end{vmatrix} \tag{2}$$

$$\vdots$$

$$\Delta_n = \begin{vmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} \end{vmatrix}$$

and $x_i = (a_{i1}, a_{i2}, \ldots, a_{i(n+1)}) \in \mathbb{R}^{n+1} \cdot i = 1,2,3,\ldots, n$

then $(X, \| \bullet, \bullet, \ldots, \bullet \|_1)$ and $(X, \| \bullet, \bullet, \ldots, \bullet \|_2)$ are n- normed linear spaces define

$$N: \underbrace{X \times \cdots \times X}_{n} \times R \to [0,1] \text{ by}$$

$$N(x_1, x_2, \ldots, x_n, t) = \begin{cases} 1 & \text{if } t > \| x_1, x_2, \ldots, x_n \|_1 \\ 0.5 & \text{if } \| x_1, x_2, \ldots, x_n \|_2 < t \leq \| x_1, x_2, \ldots, x_n \|_1 \\ 0 & \text{if } t \leq \| x_1, x_2, \ldots, x_n \|_2 \end{cases} \tag{3}$$

Then (X, N) is a fuzzy n- normed linear space . define

$$\| x_1, x_2, \ldots, x_n \|_\alpha = \inf \{ t \mid N(x_1, x_2, \ldots, x_n, t) \geq \alpha \}, \alpha \in (0,1)$$

The α-n-norms are given by (4)

$$\|x_1, x_2, \ldots, x_n\|_\alpha = \|x_1, x_2, \ldots, x_n\|_1, \text{ when } 1 > \alpha > 0.5$$
$$= \|x_1, x_2, \ldots, x_n\|_2, \text{ when } 0 < \alpha \leq 0.5$$

Let $G = \{(a,0,0,\ldots,n \text{ times } 0): a \text{ subset of } a \varepsilon R\}$ and

Choose $x_0 = (0,1,1,\ldots n \text{ times } 1)$

$$x_2, x_3, \ldots, x_n \in K = \{ (0,0,k_3^{(i)},\ldots,k_{n+1}^{(i)}) : k_3^{(i)},\ldots,k_{n+1}^{(i)} \in R \setminus \{0\} \} \quad (5)$$

(i,e)

$$x_2 = (0,0, k_3^{(2)},\ldots,k_{n+1}^{(2)})$$
$$x_3 = (0,0, k_3^{(3)},\ldots,k_{n+1}^{(3)}) \quad (6)$$
$$\vdots$$
$$X_n (0,0, k_3^{(n)},\ldots,k_{n+1}^{(n)})$$

Then

$$D_{x2,x3,\ldots,xn} (x_0,G) = \{x= (0,b,0,\ldots,(n-1) \text{ times } 0, b \in R^+ \setminus \{0\} \quad (7)$$
$$d_{x2,x3,\ldots,xn} (x,G) = \| x-x_0, x_2, x_3, \ldots, x_n\|_\alpha + d_{x2,x3,\ldots,xn} (x_0,G)\}$$

where $d_{x2,x3,\ldots,xn} (x,G) = \max\{|b|\Delta, |a|\Delta\}$,

$$\Delta = \begin{vmatrix} k_3^{(2)} & k_4^{(2)} & \ldots & k_{n+1}^{(2)} \\ k_3^{(3)} & k_4^{(3)} & \ldots & k_{n+1}^{(3)} \\ \vdots & \vdots & \ddots & \vdots \\ k_3^{(n)} & k_4^{(n)} & \ldots & k_{n+1}^{(n)} \end{vmatrix} \quad (8)$$

$$\| x-x_0, x_2, x_3, \ldots, x_n\|_\alpha = |b-1|\Delta \quad, \quad d_{x2,x3,\ldots,xn} (x_0,G) = \max\{\Delta, |a|\Delta\},$$

$$P_{G,x2,x3,\ldots xn}(x) = \{g' = (a,0,\ldots,n \text{ times } 0): -1 \leq a \leq 1\}.$$

THEOREM 3.10

Let $x \in D_{x2,x3,\ldots xn} (x_0,G)$ then

(i)$[x_0,x] = \| x-x_0, x_2, x_3, \ldots, x_n\|_\alpha \{\lambda x_0 + (1-\lambda)x : 0 \leq \lambda \leq 1\} \subset D_{x2,x3,\ldots xn} (x_0,G)$,

(ii) $D_{x2,x3,\ldots,xn}(x,G) \subset D_{x2,x3,\ldots,xn}(x_0,G).$

PROOF

(i)   let $y = \lambda x_0 + (1-\lambda)x$ such that $0 \leq \lambda \leq 1$ then

$d_{x2,x3,\ldots,xn}(y,G)$

$$\geq d_{x2,x3,\ldots,xn}(x,G) - \| x-y,x_2,x_3,\ldots,x_n \|_a$$
$$= \| x-x_0,x_2,x_3,\ldots,x_n \|_a + d_{x2,x3,\ldots,xn}(x_0,G) - \| x-y,x_2,x_3,\ldots,x_n \|_a$$
$$= \|y-x_0,x_2,x_3,\ldots,x_n \|_a + d_{x2,x3,\ldots,xn}(x_0,G).$$

we have

$$d_{x2,x3,\ldots,xn}(y,G) = \|y-x_0,x_2,x_3,\ldots,x_n \|_a + d_{x2,x3,\ldots,xn}(x_0,G).$$
$$\Rightarrow y \in D_{x2,x3,\ldots,xn}(x_0,G)$$

(ii)   let $y \in D_{x2,x3,\ldots,xn}(x,G)$. then

$$d_{x2,x3,\ldots,xn}(y,G) = \| y-x,x_2,x_3,\ldots,x_n \|_a + d_{x2,x3,\ldots,xn}(x,G).$$
$$= \|y-x,x_2,x_3,\ldots,x_n \|_a + (\| x-x_0,x_2,x_3,\ldots,x_n \|_a d_{x2,x3,\ldots,xn}(x_0,G))$$
$$= \|y-x_0,x_2,x_3,\ldots,x_n \|_a + d_{x2,x3,\ldots,xn}(x_0,G)$$
$$\Rightarrow y \in D_{x2,x3,\ldots,xn}(x_0,G)$$

$$\therefore D_{x2,x3,\ldots,xn}(x,G) \subset D_{x2,x3,\ldots,xn}(x_0,G).$$

THEOREM 3.11

Let $G \subset G_1$ and $x_0 \in X$ where G_1 is a subset of X such that

$$d_{x2,x3,\ldots,xn}(x_0,G) = d_{x2,x3,\ldots,xn}(x_0,G_1).$$

Then $D_{x2,x3,\ldots,xn}(x,G_1) \subset D_{x2,x3,\ldots,xn}(x_0,G)$ (1)

PROOF

Let $x \in D_{x2,x3,\ldots,xn}(x,G_1)$ Then by (1) we have

$$d_{x2,x3,\ldots,xn}(x,G) \geq d_{x2,x3,\ldots,xn}(x_0,G_1)$$

$$= \| x - x_0, x_2, x_3, \ldots, x_n \|_a + d_{x2,x3,\ldots,xn}(x_0, G_1)$$

$$= \| x - x_0, x_2, x_3, \ldots, x_n \|_a + d_{x2,x3,\ldots,xn}(x_0, G)$$

$$d_{x2,x3,\ldots,xn}(x, G) = \| x - x_0, x_2, x_3, \ldots, x_n \|_a + d_{x2,x3,\ldots,xn}(x_0, G)$$

$$\Rightarrow x \in D_{x2,x3,\ldots,xn}(x_0, G)$$

Hence $D_{x2,x3,\ldots,xn}(x_0, G_1) \subset D_{x2,x3,\ldots,xn}(x_0, G)$.

CONCLUSION

As fuzzy continuity and topological continuity are equivalent and since FNLSs are metrizable topological linear spaces, all results and theorems in topological linear spaces hold for FNLSs. Particularly, we can obtain fuzzy versions for the classical principles of functional analysis (such as the uniform boundedness principle, the open mapping theorem and the closed graph theorem). This remark was made for FNLSs of type $(X, N, \wedge)$. Based on our results, these principles remain true .

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GANESAR COLLEGE OF ARTS AND SCIENCE,MELASIVAPURI
DEPARTMENT OF COMPUTER SCIENCE
STUDENTS UNDERTAKING PROJECTS(Group Project)-APRIL 2023

S.No	Reg.No	Student Name	Name of the mentor	sub.code	Specify Projectwork/field work	Title of the project/Field work	Place of work done	Duration
1	CB20S197910	S.KEERTHIKA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Agriculture Based Plant Disease Prediction	Ganesar College of Arts & Science	6 Months
2	CB20S197934	V.VIJAYALAKSHMI	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Agriculture Based Plant Disease Prediction	Ganesar College of Arts & Science	6 Months
3	CB20S197927	P.SUGAPRIYA	Mr R.RAJA	16SMBECSPW	PROJECTWORK	South India Mapping Solutions	Ganesar College of Arts & Science	6 Months
4	CB20S197932	S.VIDYADEVI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	South India Mapping Solutions	Ganesar College of Arts & Science	6 Months
5	CB20S197894	D.AARTHI	Miss S.NANDHINI	16SMBECSPW	PROJECTWORK	Ensuring Distributed Accountability For Data Sharing In The Cloud	Ganesar College of Arts & Science	6 Months
6	CB20S197898	R.DHARANI	Miss S.NANDHINI	16SMBECSPW	PROJECTWORK	Ensuring Distributed Accountability For Data Sharing In The Cloud	Ganesar College of Arts & Science	6 Months
7	CB20S197896	N.ALAGUVIJAYAN	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Spatial Info-Tech Solution	Ganesar College of Arts & Science	6 Months
8	CB20S197915	S.NETHAJI	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Spatial Info-Tech Solution	Ganesar College of Arts & Science	6 Months
9	CB20S197907	N.KARTHIKEYAN	Miss S.NANDHINI	16SMBECSPW	PROJECTWORK	Tax Information System	Ganesar College of Arts & Science	6 Months
10	CB20S197928	M.SURESHKUMAR	Miss S.NANDHINI	16SMBECSPW	PROJECTWORK	Tax Information System	Ganesar College of Arts & Science	6 Months
11	CB20S197906	A.JOTHIKA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Walk Around Concealed Buildings For Internal Floor Plan Structure	Ganesar College of Arts & Science	6 Months
12	CB20S197921	A.RADHIKA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Walk Around Concealed Buildings For Internal Floor Plan Structure	Ganesar College of Arts & Science	6 Months
13	CB20S197903	S.JEGADEESHWARAN	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Online Car Auction Site	Ganesar College of Arts & Science	6 Months
14	CB20S197936	S.VISWANATHAN	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Online Car Auction Site	Ganesar College of Arts & Science	6 Months
15	CB20S200909	G.JANANI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Privacy-Preseeving Public Auditing For Data Storage Security In cloud Computing	Ganesar College of Arts & Science	6 Months
16	CB20S197909	R.KEERTHANA	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Privacy-Preseeving Public Auditing For Data Storage Security In cloud Computing	Ganesar College of Arts & Science	6 Months
17	CB20S197917	S.PARAMESHWARI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Customer Relationship Management System Using Data Mining	Ganesar College of Arts & Science	6 Months
18	CB20S197933	V.VIJAYALAKSHMI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Customer Relationship Management System Using Data Mining	Ganesar College of Arts & Science	6 Months
19	CB20S197899	B.DURAIPANDI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Smart City In Pudukkottai	Ganesar College of Arts & Science	6 Months
20	CB20S197922	V.RAJASEKAR	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Smart City In Pudukkottai	Ganesar College of Arts & Science	6 Months
21	CB20S197916	K.NIVETHA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Software License Monitoring System	Ganesar College of Arts & Science	6 Months
22	CB20S197923	V.RAMYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Software License Monitoring System	Ganesar College of Arts & Science	6 Months
23	CB20S197911	P.KENGESHWARAN	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Content Catching And Scheduling In Wireless Networks With Elastic And Inelastic	Ganesar College of Arts & Science	6 Months
24	CB20S197937	S.YOGENDRAN	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Content Catching And Scheduling In Wireless Networks With Elastic And Inelastic	Ganesar College of Arts & Science	6 Months
25	CB20S197925	K.SATHIYAPRIYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	online Bug Tracking System	Ganesar College of Arts & Science	6 Months
26	CB20S197929	S.SURYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	online Bug Tracking System	Ganesar College of Arts & Science	6 Months
27	CB20S197914	M.MATHUMITHA	Miss S.NANDHINI	16SMBECSPW	PROJECTWORK	Employee Tracker System	Ganesar College of Arts & Science	6 Months
28	CB20S197924	M.SARANYA	Miss S.NANDHINI	16SMBECSPW	PROJECTWORK	Employee Tracker System	Ganesar College of Arts & Science	6 Months
29	CB20S197919	N.PRIYANKA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Smart Construction Plus	Ganesar College of Arts & Science	6 Months
30	CB20S197926	V.SOUMIYA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Smart Construction Plus	Ganesar College of Arts & Science	6 Months
31	CB20S197902	M.HEMALATHA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Student And Staff Interaction Software	Ganesar College of Arts & Science	6 Months
32	CB20S197918	V.PRIYADHARSHINI	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Student And Staff Interaction Software	Ganesar College of Arts & Science	6 Months
33	CB20S197900	D.GOWTHAM	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Defeneses Against Online Password Guessing Attacks By Using Persuasive Click Points	Ganesar College of Arts & Science	6 Months
34	CB20S197935	R.VINOTHKUMAR	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Defeneses Against Online Password Guessing Attacks By Using Persuasive Click Points	Ganesar College of Arts & Science	6 Months
35	CB20S197895	V.AARTHI	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Secure Distributed Deduplication System With Improved Reliability	Ganesar College of Arts & Science	6 Months
36	CB20S197901	K.GUNALAKSHMI	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Secure Distributed Deduplication System With Improved Reliability	Ganesar College of Arts & Science	6 Months
37	CB20S197897	M.BHUVANESHWARI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Secure And Efficient Ranking Based Trust Prediction In Alibaba E-Commerce Web	Ganesar College of Arts & Science	6 Months
38	CB20S197905	B.JAYALAKSHMI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Secure And Efficient Ranking Based Trust Prediction In Alibaba E-Commerce Web	Ganesar College of Arts & Science	6 Months
39	CB20S197913	R.MANOJKUMAR	Miss S.NANDHINI	16SMBECSPW	PROJECTWORK	Techno Task Manager	Ganesar College of Arts & Science	6 Months
40	CB20S197920	M.RABEEKRAJA	Miss S.NANDHINI	16SMBECSPW	PROJECTWORK	Techno Task Manager	Ganesar College of Arts & Science	6 Months

HOD
Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403
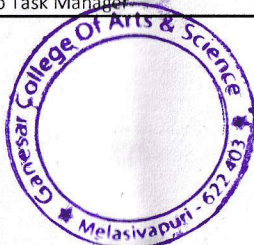
PRINCIPAL
PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

SOUTH INDIA MAPPING SOLUTIONS

A Project

Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

P.SUGAPRIYA
Reg No: CB20S197927
&
S.VIDYADEVI
Reg No: CB20S197932

Under the Guidance of

Mr R.RAJA M.Sc., M.Phil., B.Ed.,

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2023

Mr R.RAJA M.Sc., M.Phil., B.Ed.,

Department of Computer Science,

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Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "**SOUTH INDIA MAPPING SOLUTIONS**" is a bonafide record done by **P.SUGAPRIYA (Reg No: CB20S197927) & S.VIDYADEVI (Reg No: CB20S197932)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on <u>06.04.2023</u> at Ganesar College of Arts and science , Melasivapuri.

05/04/23
Head of the department
Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

05/04/23
Signature of the Guide

PRINCIPAL
Ganesar College Of Arts & Science
. MELASIVAPURI - 622 403

External Examiner

1. 6.4.23.

2. 64/23

SPATIAL INFO-TECH SOLUTION

A Project
Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

N.ALAGUVIJAYAN
Reg No: CB20S197896

&

S.NETHAJI
Reg No: CB20S197915

Under the Guidance of

Miss PL.SUDHA M.Sc., M.Phil.,

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GANESAR COLLEGE OF ARTS AND SCIENCE

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2023

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CERTIFICATE

This is to certify that the project work entitled " **SPATIAL INFO-TECH SOLUTION**" is a bonafide record done by **N.ALAGUVIJAYAN (Reg No: CB20S197896) & S.NETHAJI (Reg No: CB20S197915)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on ⟶ 06·04·2023 ⟵ at Ganesar College of Arts and science , Melaisivapuri.

Head of the department 05/04/23

Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

Signature of the Guide 05/04/23

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

External Examiner

1. 6·4·23

2. 6/11/23

ONLINE CAR AUCTION SITE

A Project

Submitted to the Bharathidasan University
in partial fulfillment of the requirements
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BACHELOR OF COMPUTER SCIENCE

By

S.JAGADEESWARAN
Reg No: CB20S197903

&

S.VISHWANATHAN
Reg No: CB20S197936

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This is to certify that the project work entitled "ONLINE CAR AUCTION SITE " is a bonafide record done by **S.JAGADEESHWARAN(Reg No: CB20S197903) & S.VISHWANATHAN (Reg No: CB20S197936)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on <u>06/04/2023</u> at Ganesar College of Arts and science , Melasivapuri.

R. R.—05/04/23
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R. R.—05/04/22
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Pudukkottai - 62~

PRINCIPAL
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MELASIVAPURI - 622 403

External Examiner

1. 6.4.23

2. R.R.— 6/4/23

SOFTWARE LICENSE MONITORING SYSTEM

A Project
Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

K.NIVETHA
Reg No: CB20S197916

&

V.RAMYA
Reg No: CB20S197923

Under the Guidance of

Miss PL.SUDHA M.Sc., M.Phil.,

Department of Computer Science

Ganesar College of Arts and science

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CERTIFICATE

This is to certify that the project work entitled "Software License Monitoring System" is a bonafide record done By **K.NIVETHA (Reg No: CB20S197916) & V.RAMYA (Reg No: CB20S197923)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on _Ob. 04. 2023_ at Ganesar College of Arts and science , Melasivapuri.

05/04/23
ignature of the Guide

05/04/23
Head of the department

Head
Department of Computer Science
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Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

External Examiner

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

1. 6.4.23

2. 6/4/23
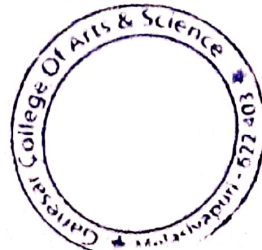
SMART CITY IN PUDUKKOTTAI

A Project
Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

B.DURAIPANDI

Reg No: CB20S197899

&

V.RAJASEKAR

Reg No: CB20S197922

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Mr.R.RAJA , M.Sc.,M.Phil.,B.Ed.,

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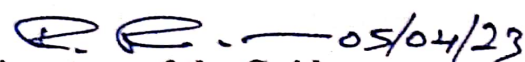
CERTIFICATE

This is to certify that the project work entitled "SMART CITY IN PUDUKKOTTAI" is a bonafide record done by **B.DURAIPANDI (Reg No: CB20S197899)** & **V.RAJASEKAR (Reg No: CB20S197922)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on 06.04.2023 at Ganesar College of Arts and science , Melasivapuri.

05/03/23

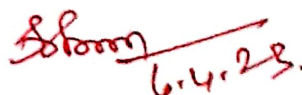**Signature of the Guide**

05/03/23

Head of the department

Head
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Ganesar College of Arts and Science
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Pudukkottai - 622403

PRINCIPAL
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External Examiner

1.   6.4.23.

2.   6/4/23

ONLINE BUG TRACKING SYSTEM

A Project
Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

K.SATHIYAPRIYA
Reg No: CB20S197925
&
S.SURYA
Reg No: CB20S197929

Under the Guidance of

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The Viva-voice examination was conducted on <u>06.04.2023</u> at Ganesar College of Arts and science , Melasivapuri.

Head of the department 05/04/23

Head
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Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

Signature of the Guide 05/04/23

PRINCIPAL
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MELASIVAPURI - 622 403

External Examiner

1. 6.4.23.

2. 6/4/23

CONTENT CATCHING AND SCHEDULING IN WIRELESS NETWORKS WITH ELASTIC AND INELASTIC

A Project
Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

Submitted by

P.KENGESHWARAN

Reg No: CB20S197911

&

S.YOGENDRAN

Reg No: CB20S197937

Under the Guidance of

Miss RM.VALLIAMMAI., M.Sc.,

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2023

Miss RM.VALLIAMMAI., M.Sc.,

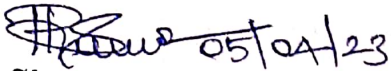Department of Computer Science,

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Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "CONTENT CATCHING AND SCHEDULING IN WIRELESS NETWORKS WITH ELASTIC AND INELASTIC" is a bonafide record done by P.KENGESHWARAN (Reg No: CB20S197911) & S.YOGENDRAN (Reg No: CB20S197937) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

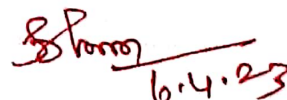The Viva-voice examination was conducted on 06/04/2023 at Ganesar College of Arts and science , Melasivapuri.

Signature of the Guide

Head of the department
Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

External Examiner

1. 6.4.23

2. 6/4/23
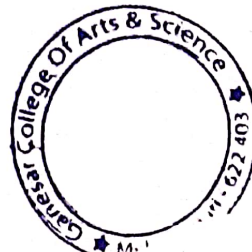
EMPLOYEE TRACKER SYSTEM

A Project

Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

M.MATHUMITHA
Reg No: CB20S197914
&
M.SARANYA
Reg No: CB20S197924

Under the Guidance of

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Department of Computer Science

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Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2023

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CERTIFICATE

This is to certify that the project work entitled "EMPLOYEE TRACKER SYSTEM" is a bonafide record done by **M.MATHUMITHA (Reg No: CB20S197914 & M.SARANYA (Reg No: CB20S197924)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on _06.04.2023_ at Ganesar College of Arts and science , Melasivapuri.

Signature of the Guide

Head of the department
Head
Department of Computer Science
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Melasivapuri, Ponnamaravathi
Pudukkottai - 622304

External Examiner

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

1.

2.
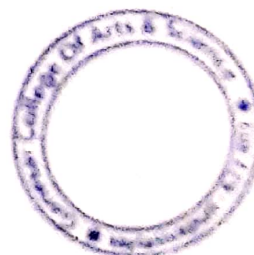
CUSTOMER RELATIONSHIP MANAGEMANT SYSTEM USING DATA MINING

A Project
Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

S.PARAMESHWARI
Reg No: CB20S197917

&

V.VIJAYALAKSHMI
Reg No: CB20S197933

Under the Guidance of

Mr R.RAJA M.Sc.,B.Ed., M.Phil.,

Department of Computer Science

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MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2023
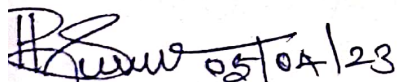
Mr R.RAJA M.Sc.,B.Ed., M.Phil.,

Department of Computer Science,

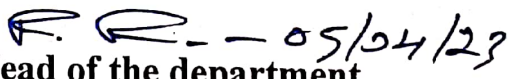Ganesar College Of Arts And Science,

Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "**CUSTOMER RELATIONSHIP MANAGEMANT SYSTEM USING DATA MINING** " is a bonafide record done by **S.PARAMESHWARI** (Reg No: CB20S197917) & **V.VIJAYALAKSHMI** (Reg No: CB20S197933) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on ___06·04·2023___ at Ganesar College of Arts and science , Melaisivapuri.

05/03/23
Head of the department
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

Signature of the Guide 05/03/23

External Examiner

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

1. 6.4.23.

2. 6/4/23

DEFENSES AGAINST ONLINE PASSWORD GUESSING

ATTACKS BY USING PERSUASIVE CLICK POINTS

A Project
Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

D.GOWTHAM
Reg No: CB20S197900
&
R.VINOTHKUMAR
Reg No: CB20S197935

Under the Guidance of

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Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu
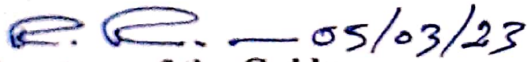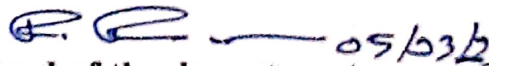APRIL-2023

Miss.PL.SUDHA.,M.Sc.,M.Phil.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "DEFENSES AGAINST ONLINE PASSWORD GUESSING ATTACKS BY USING PERSUASIVE CLICK POINTS " is a bonafide record done by D.GOWTHAM (Reg No: CB20S197900) & R.VINOTHKUMAR (Reg No: CB20S197935) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023

The Viva-voice examination was conducted on 06 - 04 - 2023 at Ganesar College of Arts and science , Melasivapuri.

Signature of the Guide

Head of the department
Head
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Melasivapuri, Ponnamaravathi
Pudukkottai - 6224...

External Examiner

1.   6.4.23

2.   6/4/23

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

SMART CONSTRUCTION PLUS

A Project

Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

N.PRIYANKA

Reg No: CB20S197919

&

V.SOUMIYA

Reg No: CB20S197926

Under the Guidance of

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Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

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APRIL-2023

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Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled **"Smart Construction Plus"** is a bonafide record done by **N.PRIYANKA (Reg No: CB20S197919) & V.SOUMIYA (Reg No: CB20S197926)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.
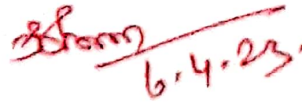
The Viva-voice examination was conducted on <u>06- 04 - 2023</u> at Ganesar College of Arts and science , Melasivapuri.

Head of the department 05/04/23

Signature of the Guide

Head
Department of Computer Science
Ganesar College of Arts and Science
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Pudukkottai - 622403

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

External Examiner

1. 6.4.23.

2. 6/4/23

ENSURING DISTRIBUTED ACCOUNTABILITY FOR DATA SHARING IN THE CLOUD

A Project

Submitted to the Bharathidasan University

in partial fulfillment of the requirements

for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

D.AARTHI

Reg No: CB20S197894

&

R.DHARANI

Reg No: CB20S197898

Under the Guidance of

Miss S. NANDHINI M.Sc.,

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI ~ 622 403

Tamil Nadu

APRIL~2023

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Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "ENSURING DISTRIBUTED ACCOUNTABILITY FOR DATA SHARING IN THE CLOUD" is a bonafide record done by **D.AARTHI (Reg No: CB20S197894) & R.DHARANI (Reg No: CB20S197898)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on 06-04-2023 at Ganesar College of Arts and science , Melasivapuri.

R. R. — 05/04/23

Head of the department

Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

Signature of the Guide

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

External Examiner

1. 6.4.23.

2. R.R. — 6/4/23

PRIVACY-PRESERVING PUBLIC AUDITING FOR DATA STORAGE SECURITY IN CLOUD COMPUTING

A Project
Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE
By
G.JANANI
Reg No: CB20S200909
&
R.KEERTHANA
Reg No: CB20S197909

Under the Guidance of

Mr R.RAJA M.Sc., M.Phil., B.Ed.,

Department of Computer Science

Ganesar College of Arts and Science

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2023

Mr R.RAJA M.Sc., M.Phil., B.Ed.,

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This is to certify that the project work entitled "PRIVACY-PRESERVING PUBLIC AUDITING FOR DATA STORAGE SECURITY IN CLOUD COMPUTING" is a bonafide record done by **G.JANANI (Reg No: CB20S200909) & R.KEERTHANA (Reg No: CB20S197909)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2022– 2023.

The Viva-voice examination was conducted on *06.04.2023* at Ganesar College of Arts and science , Melasivapuri.

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1. 6.4.23

2. — 6/4/23

AGRICULTURE BASED PLANT DISEASE PREDICTION

A Project

Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

By

S.KEERTHIKA
Reg No: CB20S197910
&
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Reg No: CB20S197934

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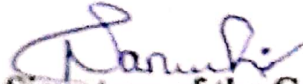MELAISIVAPURI – 622 403
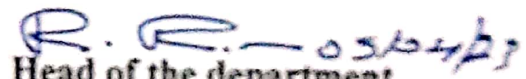
Tamil Nadu

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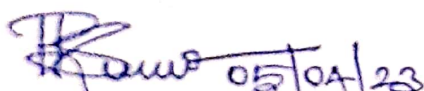
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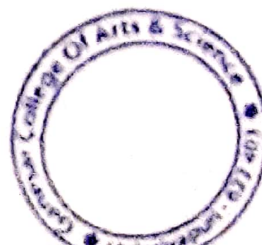
SECURE DISTRIBUTED DEDUPLICATIONS SYSTEM WITH IMPROVED RELIABILITY

A Project

Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

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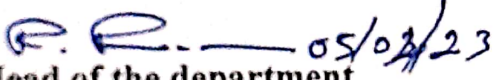
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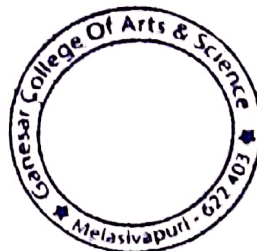
TAX INFORMATION SYSTEM

A Project
Submitted to the Bharathidasan University
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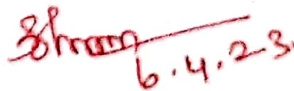
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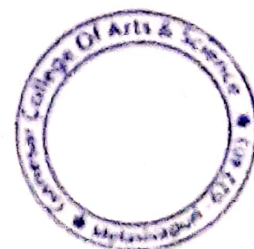
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2.

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

A Project

Submitted to the Bharathidasan University
in partial fulfillment of the requirements
for the award of the Degree of

BACHELOR OF COMPUTER SCIENCE

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STUDENT AND STAFF INTERACTION SOFTWARE

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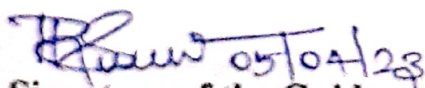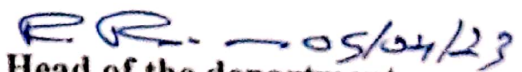
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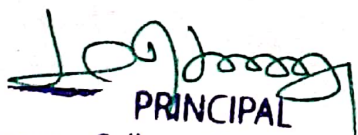Head
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WALK AROUND CONCEALED BUILDINGS FOR INTERNAL FLOOR PLAN STRUCTURE

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TECHNO TASK MANAGER

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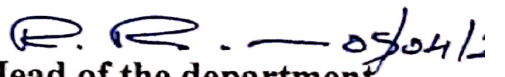
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SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

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First I thank Almighty god and my beloved parents for helping me in my studies and their blessing for finishing my project work.

I express my special thanks to our Principal **Dr.M.SELVARAJU., M.A., B.Ed., M.Phil., Ph.D.,** for encouragement and spontaneous blessings

I express Sincere thank to my guide **Mr R. RAJA M.Sc.,M.Phil.,B.Ed.,** Head, Department of Computer Science Ganesar College of Arts and Science, who have given us a valuable advice throughout my project work.

I express my thanks and gratitude to my **Parents , staff members and all my friends** who have helped me to complete this project successfully.

TABLE OF CONTENTS

ABSTRACT

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

ABSTRACT

This acquaint presents how to construe trust connections from billion-scale arranged information to profit Alibaba E-Commerce business. To successfully use the organization connections among named and unlabelled connections to foresee trust connections, we formalize trust into numerous kinds and propose a graphical model to fuse type-based dyadic and triadic relationships, to be specific eTrust. Likewise a quick learning calculationis presentedso as to deal with billion-scale organizations. Efficiently, the proposed strategies are assessedon four unique classes of datasets with named trust connections: Alibaba, Epinions, Ciao, and Advogato. Test results show that the proposed techniques accomplish altogether preferable execution over a few correlation strategies. In particular, when taking care of the genuine enormous organized information with more than 1,200,000,000 edges (Ali-huge), our strategy accomplishes 2,000× speedup to derive trust connections, contrasting and the customary diagram learning calculations. At long last, the induced trust connections to Alibaba E-trade stage have been applied: Taobao, and accomplished 2.75 percent enhancement for net product volume (GMV).

INTRODUCTION

1. INTRODUCTION

E-Commerce stage has prompted a central change in the manner that organizations connect with their clients. Practically all the renowned stages, for example, Taobao1 and Amazon2, attempt to draw in new clients or continue existing clients by creating refined methodologies to suggest items. Customary proposals typically utilize content based, cooperative separating based or mixture strategies. Every one of these strategies basically arrange clients/items into various gatherings and make suggestions dependent on the gathering data. In any case, an ongoing overview shows that 84% customers' buy practices are unequivocally affected by companions' practices or companions' recommendations3. Utilizing the trust connections between clients can essentially support E-Commerce.. Nonetheless, the test to numerous E-Commerce stages is that the majority of the trust connections are inaccessible. Online informal communities, for example, Facebook and Twitter record a wide range of kinds of social connections, yet not all connections are trustful. Trust connections frequently stow away in the enormous number of online social connections or some of the time are absent in certain organizations, e.g., family relationship may not exist in an expert informal community. Thus, as indicated by IBM's Black Friday report informal organizations including Facebook, Twitter and YouTube just contribute 0.34% of all online deals on Black Friday. Would we be able to use clients' conduct log to construe trust connections between clients? By what means can the gathered trust connections at last assistance item suggestions in E-Commerce framework? In this paper, we expect to deliberately examine the issue on Taobao, the E-Commerce foundation of Alibaba. Taobao has in excess of 500,000,000 clients and is one of the biggest E-Commerce stages on the planet — only on 11/11/2017, the deals inside 24 hours arrive at 25 billion US dollar. Figure 1(a) shows a guide to represent the issue that we are managing. The client conduct log we have gathered to consider the issue comprises of countless client practices, for example, buy history, versatile records, GPS data, and so on.. The objective is to gather the wide range of various trust and doubt connections. One instinctive route is to prepare a managed model by review every relationship as a case. For instance, in Figure 1(a), Mary and Mike consistently remain at a similar area around evening time, which infers that they may be family relationship.

SYSTEM

ANALYSIS

2. SYSTEM ANALYSIS

2.1 EXISTING SYSTEM:

Information coordination stays one of the most troublesome undertakings in information resource the board. Difficulties exist at three unique levels: construction heterogeneity, substance heterogeneity, and information heterogeneity. Among them, construction heterogeneity is brought about by the utilization of various structures or potentially various names for a similar data. Substance heterogeneity emerges when data about a similar certifiable element is put away in various information sources utilizing various identifiers. Information heterogeneity alludes to information irregularities without mapping heterogeneity and substance heterogeneity.

2.2 PROPOSED SYSTEM

- The trait esteem compromise structure we propose in this examination is choice hypothetical in nature—with the right property estimation obscure, the system chooses the worth that limits the absolute expected mistake cost for all information utilization issues viable.

- To get the expense limiting worth, the proposed structure unequivocally contemplates the likelihood conveyance of the genuine trait esteems and the expenses of mistakes for all issues.

- The general system comprises of a few significant advances: assessing the back likelihood of conceivable genuine qualities, determining the expense related with every applicant esteem, and choosing the worth that limits the normal expense of blunders. To make the proposed structure doable for ascribes with enormous areas, we likewise create procedures to decrease the quantity of competitor esteems to be thought of and the multifaceted nature of likelihood assessment

PROJECT DESCRIPTION

3. PROJECT DESCRIPTION

MODULES

3.1 EXTRACTION OF INFORMATION

Our work on separating serious area from pages is identified with past investigations of recognizing key (striking) phrases in text mining. Numerous highlights have been proposed. One well known utilized property is Term Frequency/Inverted Document Frequency (TFIDF). The autonomy of an expression is additionally proposed and estimated by the entropy of its specific circumstance. More properties like expression length are likewise examined. Key expression extraction has numerous applications, e.g., query item bunching, subject mining. Zamir and Etzioni detested a Suffix Tree Clustering (STC) which initially distinguishes sets of reports that share basic expressions, and afterward makes bunches as per these expressions. Zeng et al. utilized an AI strategy to rank the striking expressions for grouping the web results. Utilized a key expression extraction calculation to remove sub-subject terms for a given theme. In an unexpected way, our work utilizes the notable expressions positioning technique to find the serious areas and further computes a few significant properties to distinguish the spaces for two similar elements.

3.2 SEARCH AND MINING

Much work has been done on helping organizations and people gain advertising data by mining on the web assets. For instance, item notoriety mining client conclusion extraction and outline and opinion grouping. In any case, none of them identifies the equivalent items or finds organization' contenders. Investigations of relative inquiry with various granularity have likewise been researched, e.g., near internet searcher, similar site mining, similar content assortment mining and relative sentence mining. Sun proposed a similar web index, where contributing two exceptionally related an element is the key. As opposed to this, contributing one element just is sufficient for our framework and all serious substances against the given one will be removed. In Liu et al. contrasted two sites with find sudden data. Zang and Zhai characterized a near book mining issue (CTM) and proposed a Mixture Model functioning admirably in the part of finding basic subjects and explicit topics for every assortment. CoMiner is recognized from above, since it is to mine rivals as opposed to contrasting the substance and structure of two sites/text assortments. All the more as of late, near sentence mining, which is utilized in our serious proof mining. In an unexpected way, we have to

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rapidly distinguish the serious confirmations in a web-scale setting. An improved at this point successful methodology is proposed dependent on our perception.

3.3 COMPETITORS FROM THE WEB

The undertaking of mining contenders incorporates getting the contenders for a given element, expounding the serious spaces (fields) regarding the contenders, and summing up the assessment of nitty gritty serious confirmations. Let us first officially characterize contender, serious space, and serious proof for the simplicity of understanding as follows:

- **Competitor:** The contender of a specific substance E is a competitor C that E plans to vanquish. For instance, leaving Microsoft alone the given element, contender might be Google, Sony, and so on

- **Competitive Domain:** The serious space between the given element E and its rival C is an expression D which depicts the field or highlight that E and C rival. For instance, a notable serious area among Microsoft and Google would be web search.

- **Competitive Evidence:** The serious proof is a sentence that communicates a serious/comperative connection dependent on similitudes or contrasts of the given element E and its rival C. For instance, the sentence "Google just in front of Microsoft in search" said by Ballmer is clearly a serious proof of Google and Microsoft in their serious area search.

In this paper, another calculation, CoMiner, is proposed for mining contenders from the web with the assistance of web internet searcher.

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3.4 COMPETITOR DISCOVERY

The goal of this progression is to remove at that point to rank the contenders of the given substance from a lot of pages returned by the web index. Our rival revelation calculation depends on the accompanying perceptions.

• **Web Redundancy:** Although on the web there are loads of differed articulations which show the near connections between the given substance and its rivals, we need a couple basic examples to extricate applicants from the website pages. In another word, the substances circulated in the boundless spaces can be separated with the utilization of limited sorts of examples. E.g., Sony and its rival Microsoft may show up in numerous regularly utilized structures, as Microsoft versus Sony and Microsoft or Sony.

• **Uneven Co-event:** It implies that the substance and its rival normally have considerably more co event than those non-contender sets. For instance, individuals frequently examine Sony along with Microsoft as opposed to Google which doesn't rival Sony in numerous spaces. In light of the above perceptions, the nitty gritty calculation for contender disclosure is proposed

3.5 FEASIBILITY ANALYSIS

Attainability study is a significant stage in the product improvement measure. It empowers the engineer to have an appraisal of the item being created. It alludes to the achievability investigation of the item as far as results of the item, operational use and specialized help needed for actualizing it.

Practicality study ought to be performed based on different models and boundaries. The different attainability examines are:

✓ Economic Feasibility
✓ Operational Feasibility
✓ Technical Feasibility

1. **Economic Feasibility:** It alludes to the advantages or results we are getting from the item when contrasted with the all out cost we are spending for building up the item. In the event that the advantages are pretty much equivalent to the more established framework, at that point it isn't attainable to build up the item.

2. Operational Feasibility: It alludes to the practicality of the item to be operational. A few items may function admirably at plan and usage yet may come up short in the constant climate. It incorporates the investigation of extra human asset required and their specialized mastery.

3. Technical Feasibility: It alludes to whether the product that is accessible in the market completely bolsters the current application. It examines the advantages and disadvantages of utilizing specific programming for the turn of events and its achievability. It likewise examines the extra preparing should have been given to individuals to make the application work.

6

SYSTEM REQUIREMENTS

4. SYSTEM REQUIREMENTS

4.1 Software Requirements:

- Netbeans
- Front End- Jsp
- Back End- SQL Server
- Language- Java
- Windows XP

4.2 Hardware Requirements:

- RAM   : 1 GB
- Hard Disk : 80 Gb
- Processor : Pentium IV

Scanned with OKEN Scanner

4.3 SOFTWARE DEMONSTRATION

BACK END

SQL SERVER:

The RDBMS idea is picking up force everywhere on the world. Microsoft SQL Server is a RDBMS for Windows, delivered in USA by the Microsoft Corporation.

Function methods are coded and labeled to those functions as per the need of the application. These strategies are run at those specific functions and in this manner the entire coding depends on function driven system. The types of SQL Server help; to make Tables, Screen Queries help in creation-convoluted questions and age instructive reports is made a simple assignment.

SQL Server stores records in composed records called tables. At least one tables in SQL Server make up an entire information base. A table is only an assortment If records with a similar structure. The entirety of the records in the table contain a similar sort of data. SQL Server permits setting up tables and like them to different tables.

Microsoft SQL Server is social information base. This implies that the information in a few tables is connected through at least one fields present in the tables. It's this business of connected tables that isolates data set projects like SQL Server from different kinds of information base, a level document data set which permits just single table in which to store all data.

Microsoft SQL Server 2000 broadens the exhibition, dependability, quality, and convenience of Microsoft SQL Server rendition 7.0. Microsoft SQL Server 2000 incorporates a few new highlights that make it an amazing information base stage for huge scope online conditional preparing (OLTP), information warehousing, and internet business applications.

The OLAP Services include accessible in SQL Server variant 7.0 is presently called SQL Server 2000 Analysis Services. The term OLAP Services has been supplanted with the term Analysis Services. Examination Services likewise incorporates another information mining segment.

The Repository segment accessible in SQL Server form 7.0 is presently called Microsoft SQL Server 2000 Meta Data Services. References to the segment currently utilize the term Meta

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Data Services. The term storehouse is utilized distinctly concerning the archive motor inside Meta Data Services.

Microsoft® SQL Server™ 2000 is a lot of parts that cooperate to meet the information stockpiling and examination needs of the biggest Web destinations and undertaking information handling frameworks. The subjects in SQL Server Architecture portray how the different parts cooperate to oversee information adequately

FEATURES OF SQL SERVER 2000

- **Internet Integration**

The SQL Server 2000 information base motor incorporates coordinated XML uphold. It additionally has the adaptability, accessibility, and security highlights needed to work as the information stockpiling segment of the biggest Web locales. The SQL Server 2000 programming model is coordinated with the Windows DNA engineering for creating Web applications, and SQL Server 2000 backings highlights, for example, English Query and the Microsoft Search Service to consolidate easy to use questions and ground-breaking search capacities in Web applications.

- **Scalability and Availability**

A similar information base motor can be utilized across stages going from PCs Microsoft Windows® 98 through huge, multiprocessor workers running Microsoft Windows 2000 Data Center Edition. SQL Server 2000 Enterprise Edition underpins highlights, for example, combined workers, listed perspectives, and enormous memory uphold that permit it to scale to the presentation levels needed by the biggest Web destinations.

- **Enterprise-Level Database Features**

The SQL Server 2000 social information base motor backings the highlights needed to help requesting information handling conditions. The information base motor ensures information respectability while limiting the overhead of overseeing a great many clients simultaneously adjusting the data set. SQL Server 2000 appropriated questions permit you to reference information from different sources as though it were an aspect of a SQL Server 2000 information base, while simultaneously, the disseminated exchange uphold secures the respectability of any updates of the dispersed information. Replication permits you to

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likewise keep up different duplicates of information, while guaranteeing that the different duplicates stay synchronized. You can imitate a lot of information to various, versatile, disengaged clients, have them work independently, and afterward combine their changes back to the distributer.

Ease of installation, deployment, and use

SQL Server 2000 includes a set of administrative and development tools that improve upon the process of installing, deploying, managing, and using SQL Server across several sites. SQL Server 2000 also supports a standards-based programming model integrated with the Windows DNA, making the use of SQL Server databases and data warehouses a seamless part of building powerful and scalable systems.

Data warehousing

SQL Server 2000 incorporates devices for separating and dissecting synopsis information for online expository preparing. SQL Server additionally incorporates instruments for outwardly planning information bases and dissecting information utilizing English-based inquiries.

RELATIONAL DATABASE COMPONENTS

The information base part of Microsoft® SQL Server™ 2000 is a Structured Query Language (SQL)– based, adaptable, social data set with coordinated Extensible Markup Language (XML) uphold for Internet applications. Every one of the accompanying terms depicts a central aspect of the design of the SQL Server 2000 information base part:

Structured Query Language

To work with information in a data set, you need to utilize a lot of orders and proclamations (language) characterized by the DBMS programming. A few unique dialects can be utilized with social information bases; the most well-known is SQL. The American National Standards Institute (ANSI) and the International Standards Organization (ISO) characterize programming principles, including guidelines for the SQL language. SQL Server 2000 backings the Entry Level of SQL-92, the SQL standard distributed by ANSI and ISO in 1992. The lingo of SQL upheld by Microsoft SQL Server is called Transact-SQL (T-SQL). T-SQL is the essential language utilized by Microsoft SQL Server applications.

Extensible Markup Language

XML is the rising Internet standard for information. XML is a lot of labels that can be utilized to characterize the structure of a hypertext archive. XML archives can be effectively prepared by the Hypertext Markup Language, which is the most significant language for showing Web pages.

Albeit most SQL articulations return their outcomes in a social, or plain, result set, the SQL Server 2000 information base segment underpins a FOR XML provision that profits results as a XML archive. SQL Server 2000 additionally bolsters Path questions from Internet and intranet applications. XML reports can be added to SQL Server information bases, and the OPENXML statement can be utilized to uncover information from a XML archive as a social outcome set.

FRONT END

ABOUT JAVA

JAVA- Java may be a programming language originally developed by James Gosling at Sun Microsystems and released in 1995 as a core component of Sun Microsystems' Java platform. The language derives much of its syntax from C and C++ but features a simpler object model and fewer low-level facilities. Java applications are typically compiled to bytecode (class file) which will run on any Java Virtual Machine (JVM) no matter computer architecture. Java may be a general-purpose, concurrent, class-based, object-oriented language that's specifically designed to possess as few implementation dependencies as possible. it's intended to let application developers "write once, run anywhere." Java is currently one among the foremost popular programming languages in use, particularly for client-server web applications. Java Platform is one characteristic of Java is portability, which suggests that computer programs written within the Java language must run similarly on any hardware/operating-system platform. this is often achieved by compiling the Java language code to an intermediate representation called Java bytecode, rather than on to platform-specific machine language . Java bytecode instructions are analogous to machine language , but are intended to be interpreted by a virtual machine (VM) written specifically for the host hardware. End-users commonly use a Java Runtime Environment

(JRE) installed on their own machine for standalone Java applications, or during a browser for Java applets. Standardized libraries provide a generic thanks to access host-specific features like graphics, threading, and networking.

SYSTEM DESIGN

INPUT DESIGN:

Information configuration is the way toward changing over a client situated depiction of the contributions to a PC based business framework into a program arranged particular.

The destinations in the information plan:

- To produce a financially savvy strategy for input.

- To accomplish a most noteworthy conceivable degree of exactness.

- To guarantee that information is satisfactory to and perceived by the client staff.

INPUT STAGES

As an aspect of the general information measure. They incorporate
- Data Recording – Collection of information at its source.
- Data Description – Transfer of information to an information structure
- Data Conversion – Conversion of the information to a PC adequate medium.
- Data Verification – Checking the change
- Data Control – Checking the precision and controlling the progression of information to the PC.
- Data Transmission – Transmission or moving the information to the PC.
- Data Validation – Checking the info information by program when it enters the PC framework.
- Data Correction – Correction the blunders that are found at any beginning phases.

OUTPUT DESIGN:

The yield configuration is an on going action nearly from the earliest starting point of the undertaking, and follows the standards of structure plan. Impacts and well characterize a yield configuration improves the relationship of framework and the client, in this way encouraging dynamic. A significant type of yield is a printed version from the printer, anyway delicate duplicates re accessible.

The Types of yield utilized in the framework are: -

nside yields: Whose objective is inside the association and is the client's primary interface ith the PC.

ituitive yields: - Which includes the client in discussing legitimately with the PC.

iter yields – Whose objective is outside the association and which require extraordinary nsideration since they venture the picture of the association.

Architecture Diagram

```
┌──────────┐      ┌──────────────────┐      ┌──────────────┐
│   User   │─────▶│  Collect Site Info│─────▶│ View Details │
└──────────┘      │  from Database to │      └──────────────┘
                  │   design Site     │              │
                  └──────────────────┘              │
                           ▲                         ▼
                    ┌─────────────┐          ┌──────────────┐
                    │  Database   │          │ View product │
                    └─────────────┘          │   details    │
                                             └──────────────┘
```

```
┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐
│  Site 3  │   │  Site 2  │   │  Site 2  │   │  Site 1  │
└──────────┘   └──────────┘   └──────────┘   └──────────┘
```

```
              ┌─────────────────────┐
              │ Analysis Site Details│
              └─────────────────────┘
                        │
                        ▼
              ┌─────────────────────┐
              │     Admin User      │
              └─────────────────────┘
```

```
┌──────────────┐          ┌──────────────────┐
│ Login Check  │─────────▶│ Site Design Detail│
└──────────────┘          └──────────────────┘

                          ┌──────────────────┐
                          │ Site Information  │
                          └──────────────────┘
```

```
┌──────────────────┐          ┌──────────────┐
│ Display BEST SITE│◀─────────│   Database   │
└──────────────────┘          └──────────────┘
```
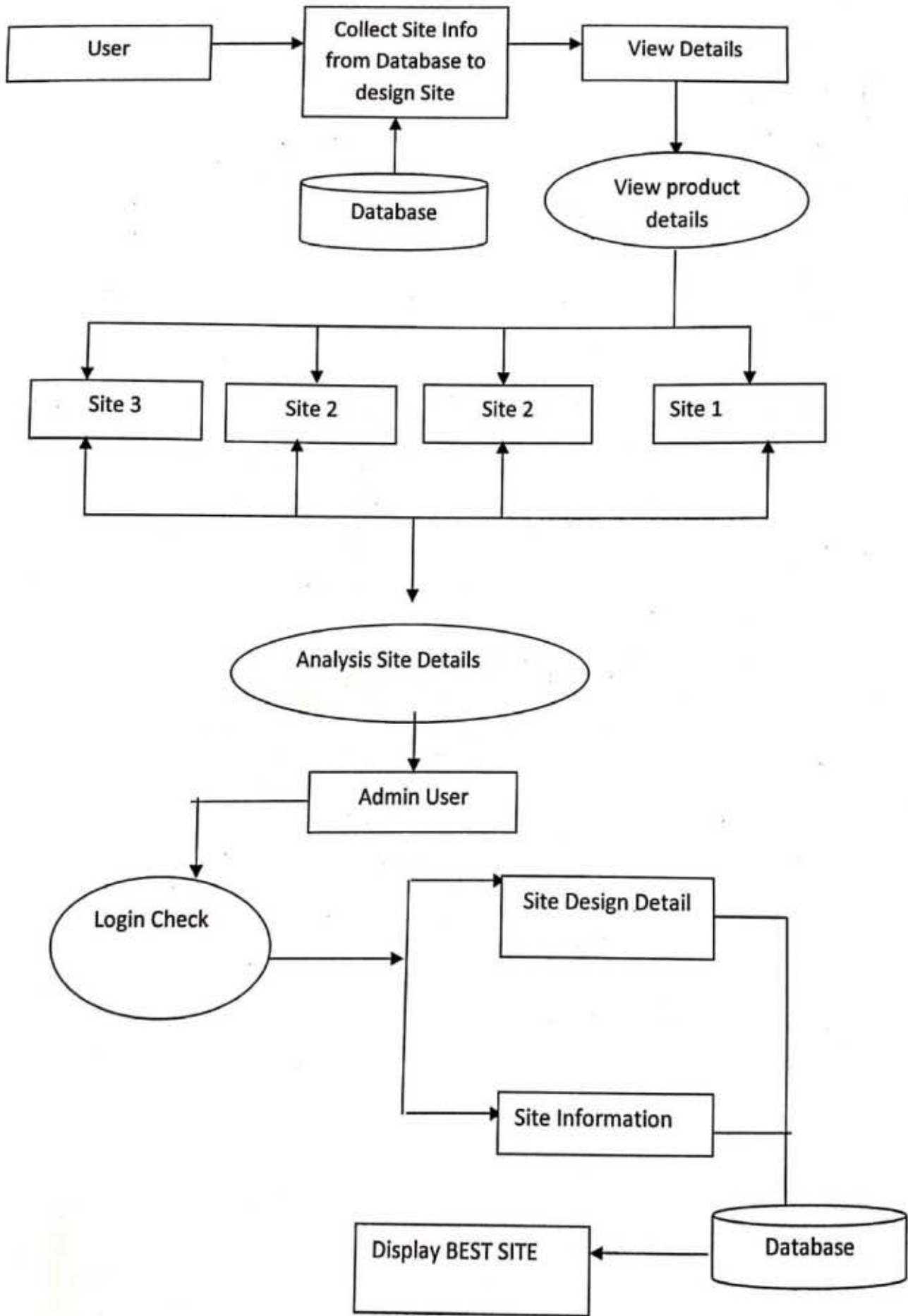
TESTING

5.TESTING

Testing is the most significant in the existence pattern of the product improvement. Testing might be completed during the Implementation stage to check that the product carries on as proposed by its originator. This later testing stage checks conformance with prerequisites and evaluates the unwavering quality of the framework. Framework testing makes a legitimate presumption that if all the pieces of the framework is right, the objective will be effectively accomplished. The best program is useless on the off chance that it doesn't simple client needs. When testing of another framework is effective, the program will work with the information effectively. Testing and approval go inseparably. The different testing completed.

At the point when a framework is created, it is normal that it performs properly. In practice, notwithstanding, a few mistakes consistently happen. The principle reason for testing a data framework is to discover the blunders and right them. An effective test is one, which discover a blunder. The primary targets of the framework testing are

- To guarantee during the activity that the framework will proceed according to indicated in the plan stage.
- To ensure that the framework meets client necessities during tasks.
- To confirm that the controls consolidated in the framework capacities as proposed.
- To see that if right sources of info are taken care of into the system,it gives wonderful yield.
- To confirm that during activity wrong information preparing and yield will be erased.

Programming testing is a basic component of programming quality affirmation and speaks to a definitive survey of particular, plan and coding. In the event that the testing directed effectively, it will reveal blunders in the product. As an optional advantage, testing shows that the product capacities seem, by all accounts, to be working as indicated by detail and that presentation prerequisites seem to have been made.

The extent of the framework test ought to incorporate both manual activities and PC tasks framework testing is a complete assessment of the projects, manual methodology, PC tasks and controls.

SYSTEM TESTING

Framework testing will be trying led on a total, coordinated framework to assess the framework's consistence with its predetermined necessities. Framework testing falls inside the extent of discovery testing, and accordingly, ought to require no information on the inward plan of the code or rationale.

TYPES OF TESTING

UNIT TESTING

In unit testing, the whole program that makes the framework tried. Unit testing initially centres on the modules, autonomous of each other to find mistakes. This empowers to identify blunders in coding and the rationale inside the module alone. In the unit testing control way are tried to eliminate mistakes inside the limit of the module.

INTEGRATION TESTING

Incorporation testing can continue in various manners, which can be extensively portrayed as top down or base up. On top down joining testing the elevated level control schedules are tried first, conceivably with the center level control structures present just as stubs.

FUNCTIONAL TESTING

Practical testing is a sort of discovery testing that puts together its experiments with respect to the particulars of the product segment under test. Capacities are tried by taking care of them input and looking at the yield, and interior program structure is once in a while thought (dislike in white-box testing).

SYSTEM TESTING

Framework testing is performed on the whole framework with regards to a Functional Requirement Specification(s) (FRS) as well as a System Requirement Specification (SRS). Framework testing tests the plan, yet in addition the conduct and even the accepted desires for the client. It is likewise expected to test up to and past the limits characterized in the product/equipment necessities specification(s).

WHITE BOX TESTING

This is an experiment plan strategy that utilizes the control structure of the procedural plan to determine experiments. Utilizing it, the product designer can infer experiments that, Guarantee that all autonomous ways inside a module have been practiced once.

- Exercise all coherent choices on their actual and bogus sides

- Exercise all circles at their limits and inside operational limits

- Exercise inner information structures to guarantee their legitimacy.

BLACK BOX TESTING

These spotlights on the utilitarian necessities of the product. It empowers the product specialist to determine sets of info conditions that will completely practice all utilitarian prerequisites for a program. It endeavours to discover blunders, for example,

- Incorrect or missing capacities

- Interface blunders

- Errors in information structures or outside data set admittance

TEST CASE AND REPORT

TEST CASES	STEPS	EXPECTED RESULT	ACTUAL RESULT	STATUS
Test id-1 Execute the .NET application	Enter the WEB application	Home screen should be opened	Home screen is opened	Success
Test id-2 User Details	Enter the no of User	Error produced for empty field And corrected	UserIDGenerated successfully	Success
Test id-2 Customer Details	For each Customer Details	Customer car details Calculated	success	Success
Test id-3 Purchase Details	Adding Purchase list	It should be stored in database	success	Success
Test id-4 Reports	Report generate for sales	For employee id report generator	Successfully bill generated	Success

IMPLEMENTATION

SYSTEM IMPLEMENTAION

Usage is that phase of the venture when the hypothetical plan is transformed into a working framework. Subsequent to testing the modules successfully, the fundamental benefits are given to the clients. All the clients are mentioned to deal with the framework cautiously. The constant issues that happen are effectively explained. The goal is to placed the tried framework into activity. It comprises of

Testing the created program with test information.

1. Detection and amendments of blunders.
2. Making fundamental changes in the framework.
3. Checking of reports.
4. Creating PC viable documents.
5. Installation of equipment and programming utilities.

An execution depiction that shows usage subtleties for every activity inferred by message that is passes to an article. Execution subtleties incorporate data about the items private part; that is, inward insights regarding the information structures that describe the articles ascribes and procedural details that depict tasks.

An implementation portrayal of an item gives the interior subtleties that are needed for usage yet are a bit much for summon. That is, the architect of the item should give a usage depiction and should along these lines make the inside subtleties of the article. Notwithstanding, another originator or implementer who utilizes the item or different occasions of the article requires just the convention portrayal however not the usage depiction.

This framework is executed by introducing the product on a machine with Windows 2000 climate and associated with an organization. The application is rushed to check on the off chance that it recovers the fundamental data from far off machines and along these lines the application is tried to check for consistency of yield and for different sorts of information.

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The module concerning the far off access of the worker is likewise executed in a web introduced climate. The whole work area control of any worker of any organization is recovered empowering to control the whole organization in the Internet. The programming is executed by giving the IPAddress of the worker unfamiliar nations and found to fill in as proposed. The framework goal office and the pressure level additionally working in an ideal way. It is consequently encouraged to associate the worker in the Internet by IP Address and afterward control the organization which empowers the work area control of the hosts also. The worker can be associated in any framework gave an Internet worker.

RESULT
&
DISCUSSION

7. RESULT AND DISCUSSION

This examination uses an enlightening list of 220 E-trade organization assembled self-assertively through review at High forecast client. The instructive assortment contains 183 positive and 37 negative assembled from review with 34 variables. In this application, Clustering reliant on best first chase was used with five center points augmentation to reduce the segment of instructive assortment by clearing the uncorrelated credit to the figure class. Despite feature decision computation, similarly select ID3 decision tree estimation, to evaluate the exactness on picked features. The examinations are coordinated using instrument. Run a Clustering with search space best-first request on dataset and record the picked features. By then apply ID3 just on the picked features set and precedent by and large precision by 10-overlay cross-endorsement. To survey the introduction of request, this paper has gotten exactness, audit and F-measure as a presentation measure.

In overlaid materials, repeated cyclic weights, influence, and so on can make layers disengaged, outlining mica - like structure of discrete layers, with tremendous loss of mechanical quality. De-spread in like manner occurs in reinforced strong structures subject to stronghold disintegration, in which case the oxidized metal of the help is more unmistakable in volume than the primary metal. The oxidized metal thusly requires more important space than the primary invigorating bars, which causes a wedge-like load on the strong. This force definitely overcomes the decently weak flexibility of concrete, achieving a parcel (or de-front) of the strong above and underneath the sustaining bars. Fortified metal spreads to high accuracy and consistency. The usage of a specific contradict gives both securing properties inside the stack similarly as holding limits. The scratching methodology gives a burr free finishing, amazing to crash issues during winding. The full method is available, including post stacking organizations, for instance, beating where required. Surface cruelty assessments are central in depiction of the features of a machined surface. To take a gander at the effect of cutting limits on surface repulsiveness inside and out, incalculable examinations are required, dependent upon the amount of limits. By utilizing the technique for structure of preliminaries (DoE), the amount of examinations can be diminished with the goal that the effect of limits could be reviewed appropriately. In case straight effects of cutting limits are thought of, by then fragmentary factorial structure is satisfactory, anyway to examine the quadratic term, RSM procedure must be utilized. Machining organizations continually mentioning for higher creation rate and improved machine limit as quality and benefit accept a basic occupation in

the current collecting market. The online business of nature of the made sure about thing (or thing) impacts the degree of satisfaction of the clients during the use of the gained items. Higher creation rate can be refined at high cutting movement, feed, significance of cut which is obliged by instrument wear, limit of tooling, surface fruition and precision required decision of cutting limits is usually a compromise between a couple of elements and it will in general be successfully possible to choose by using Response Surface Methodology.

The data accumulated from 220 E-trade locales was inspected to consider the repeat flow against each factor of that E-business who has completely decided to positioning over the range of procurement program. The Predicting variable has two likely characteristics, for instance, Yes (all out purchasing who have completely decided to in general seraching), and No (solitary site review) and subject to these two get-togethers

$$True\ positive = \frac{TP}{P}$$

$$False\ Negative = \frac{FP}{N}$$

$$Recall = \frac{TP}{TP + FN}$$

$$Precision = \frac{TP}{TP + FP}$$

$$F - measure = \frac{2 * Recall * Precision}{Recall + Precision}$$

Table 5: frequency distribution of Prediction User

	Frequency	Percent	Cumulative Percent
No	183	83.2	83.2
Yes	37	16.8	100.0
Total	220	100.0	
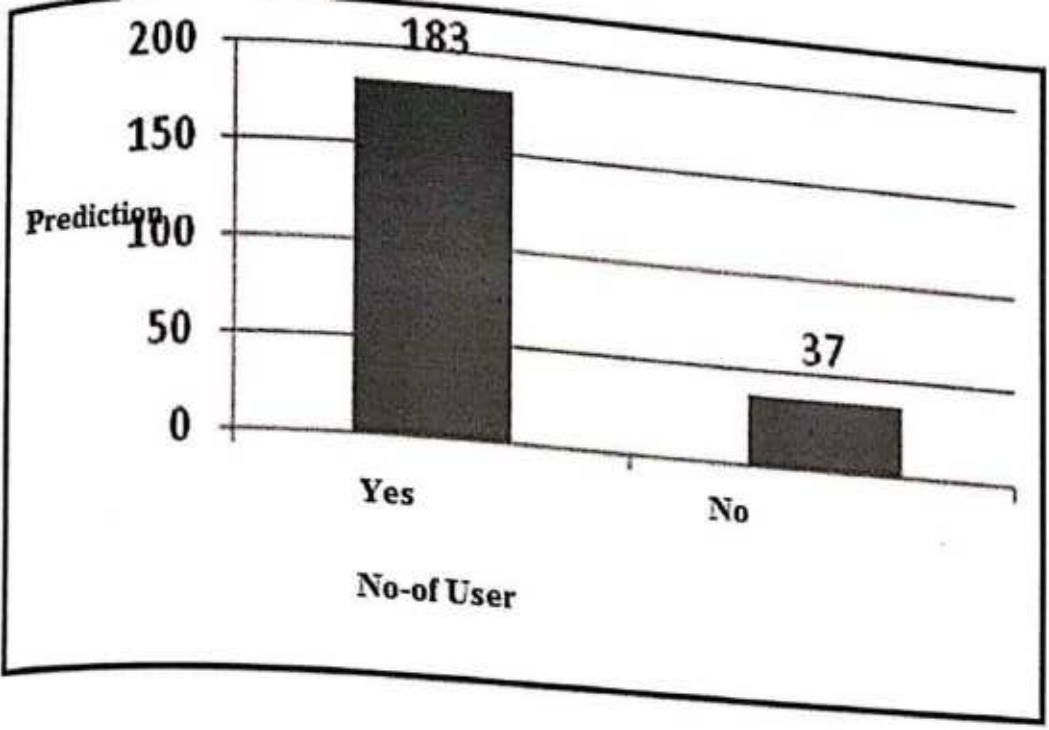
Fig. 6.1 Frequency Distribution of Searching User

The gigantic data set aside in educational dataset that contained significant information for foresee execution of client. The request was used to anticipate end grade of client and as there are various systems as data gathering, gullible byes in direct classifier method was used here. Using pondered and observed each gathering; it was structure table choosing qualities of each Cluster and assessment between all packs as appeared in Table 1 which was sincere byes classifier foreseen in level of bundle as C1 96.8%, C2 93.9% and C3 98.8% that was best pack.

Fig depicts graphical depiction of batching as unsophisticated byes classifier was data mining task which discovered nature of E-trade organization on semesters based that have a spot with one gathering was more related to each other than to E-business organization be fitting to arranged gathering. Fair of clustering was to find extraordinary gatherings with the ultimate objective that bundle (C1, C2, and C3) in second year detachments was intensified and (C1, C2, and C3) in third year divisions was restricted.

Fig percentage of clusters (c1, c2, c3) using naïve byes classifier

Predicted

		C1	C2	C3	Σ
Actual	C1	96.8 %	0.9 %	0.6 %	212
	C2	1.4 %	93.9 %	0.6 %	112
	C3	1.8 %	5.2 %	98.8 %	176
	Σ	217	115	168	500
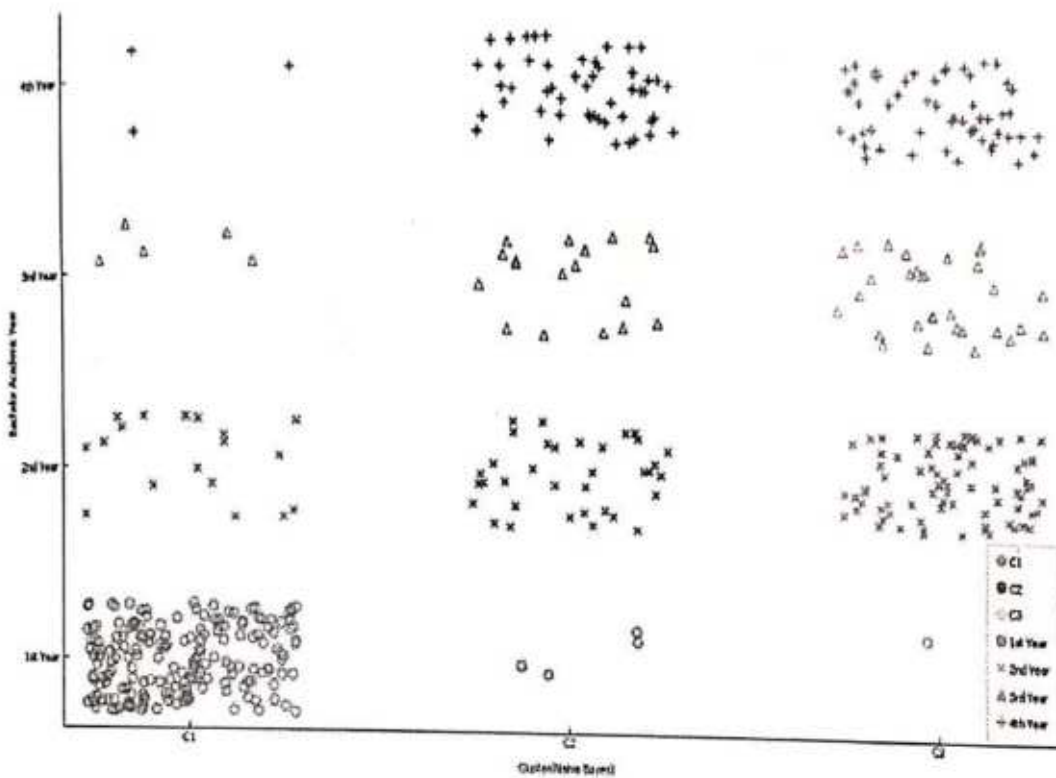
Fig.6.2 Naïve Byes Classifier (Clusters)

By then the textural features of the model are diverged from those of the readiness pictures with a plan computation, and the model is given out to the order with the best match. Using the dispersal techniques picture updated scaling should be assessed. In the surface assessment In the Texture portrayal measure incorporates two phases: the learning stage and the affirmation stage. This space matches with the one where the redesign of the scattering coefficient versus the slanting force is the most quick. The significant and sufficient conditions for the non-monotonic direct of the spread coefficient as a component of temperature are found. The effect of the speeding up scattering by inclination and temperature is displayed to be delicate to the assessment of the lopsidedness limit of the

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potential. In the learning stage, the goal is to create a model for the surface substance of each surface class present in the arrangement data, which overall includes pictures with acknowledged class names in the surface gathering pictures using the fragmentary wavelet change picture improved should be enough

The gathering strategy applied in research was k-suggests; that test was to pick best bundle network to be centroid. The batching method conveyed with three gatherings. Figure exhibit came about centroid Table where from figure that shows ordinary assessment of each bundle; model gathering based bought Cluster (C1, C2, and C3) have number of understudies in consistently.
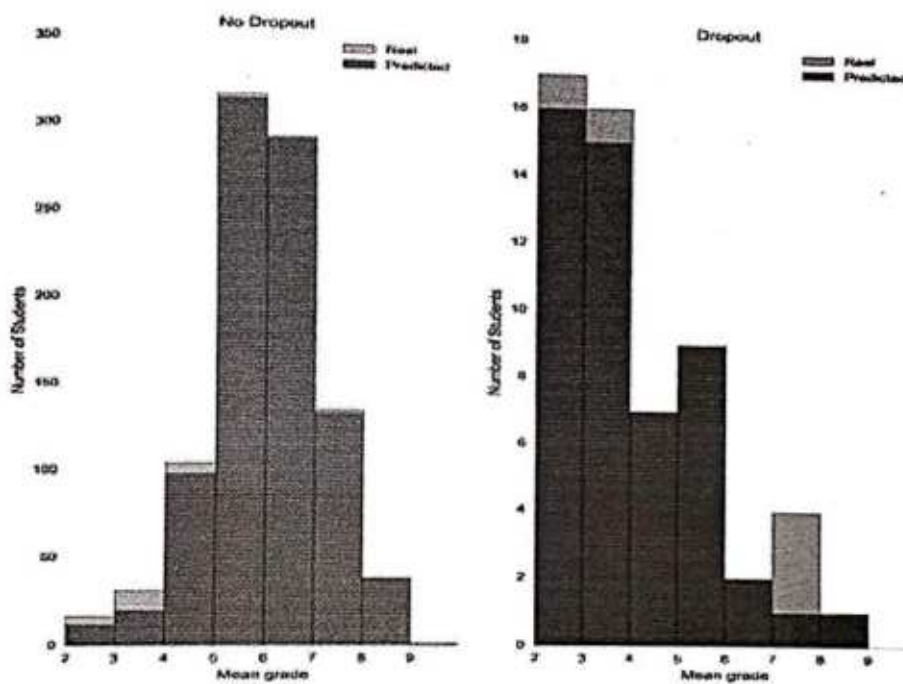
Fig 6.3 Error prediction by mean grade

CONCLUSION

8. CONCLUSION

This theory actualized how to derive trust connections to encourage Alibaba's E-Commerce business. We formalize trust into four-composed colleagues and direct an investigation on a wide range of type-based dyadic and triadic network adjustments among connections. At that point we propose a novel strategy to be specific eTrust by consolidating the found connection designs into a factor diagram model. Exploratory outcomes on four kinds of genuine world datasets show that the proposed technique fundamentally outflanks examination strategies. Notwithstanding, the impediment of the proposed eTrust technique is the potential failure when managing enormous diagrams. A surmised model eTrust-s is proposed to address the restriction, however may hurt the exactness. In various down to earth applications, as we tried, eTrust-s performs quite well, at any rate just as eTrust.

- Data heterogeneity is one of the significant difficulties in information joining. While a few methodologies have been proposed in the earlier writing to deal with mathematical worth clashes, these methodologies share a typical restriction—the future uses of the information are disregarded during the time spent information coordination.

- In this exploration, we build up a choice hypothetical structure to decide the expense limiting qualities to store in a combined ace record, which is thusly used to help future information applications issues.

- This system is remarkable in that it chooses the qualities that limit the normal expense of Type I, Type II, and distortion mistakes.

- As the reproduced try shows, noteworthy cost reserve funds can be accomplished by embracing the proposed structure rather than specially appointed methodologies. This structure permits associations to determine information irregularity in a robotized and cost-proficient way, and thus offer better help for associations' operational and dynamic exercises.

FUTURE ENHANCEMENTS:

- The wide accessibility of information from different outside and frequently temperamental information sources, the proposed structure assists associations with exploiting these outer information sources while simultaneously limiting the possible expense of inaccurate information esteems.

- The system can uphold a wide scope of information application issues, for example, direct advertising, the board of medical services information, and antiterrorism endeavors among others.

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APPENDIX

10.APPENDICES

10.1 SOURCE CODE

LOGIN

```html
<!doctype html>
<!--[if lt IE 7]><html class="no-js lt-ie9 lt-ie8 lt-ie7" lang=""><![endif]-->
<!--[if IE 7]><html class="no-js lt-ie9 lt-ie8" lang=""><![endif]-->
<!--[if IE 8]><html class="no-js lt-ie9" lang=""><![endif]-->
<!--[if gt IE 8]><!--><html class="no-js" lang=""><!--<![endif]-->
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
<title></title>
<meta name="description" content="">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="apple-touch-icon" href="apple-touch-icon.png">
<link rel="stylesheet" href="assets/css/bootstrap.min.css">
<!--    <link rel="stylesheet" href="assets/css/bootstrap-theme.min.css">-->
<!--For Plugins external css-->
<link rel="stylesheet" href="assets/css/plugins.css" />
<!--Theme custom css -->
<link rel="stylesheet" href="assets/css/style.css">


<!--Theme Responsive css-->
<link rel="stylesheet" href="assets/css/responsive.css" />
<script src="assets/js/vendor/modernizr-2.8.3-respond-1.4.2.min.js"></script>
</head>
<body data-spy="scroll" data-target="#main-navbar">
<!--[if lt IE 8]>
```

```html
<p class="browserupgrade">You are using an <strong>outdated</strong> browser. Please <a
href="http://browsehappy.com/">upgrade your browser</a> to improve your experience.</p>
<![endif]-->

                <div class='preloader'><div class='loaded'> </div></div>

<div id="menubar" class="main-menu">

<nav class="navbar navbar-default navbar-fixed-top">

<div class="container">

<!-- Brand and toggle get grouped for better mobile display -->

<div class="navbar-header">

<button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#bs-
example-navbar-collapse-1" aria-expanded="false">

<span class="sr-only">Toggle navigation</span>

<span class="icon-bar"></span>

<span class="icon-bar"></span>

<span class="icon-bar"></span>

</button>

<h2>SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-
COMMERCE WEB</h2>

</div>

<!-- Collect the nav links, forms, and other content for toggling -->

<div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">

<ul class="nav navbar-nav navbar-right">

<li class="active"><a href="index.jsp">Home<span class="sr-only">(current)</span></a></li>

<li><a href="admin_login.jsp">Admin</a></li>

<li><a href="user_login.jsp">User</a></li>

<div class="contact-number text-right">

</div>

</ul>

</div><!-- /.navbar-collapse -->
</div><!-- /.container-fluid -->
```

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```html
</nav>

</div>

<!--Home page style-->

<header id="home" class="sections">

<div class="container">

<div class="row">

<div class="homepage-style">

<div class="top-arrow hidden-xs text-center"><img src="assets/images/top-arrow.png" alt=""
/></div><div class="col-md-6 col-sm-6 col-xs-12">

<div class="unique-apps">

<h2>Detecting<br>SPAM REVIEWS</h2>

<p>                    Nowadays, a big part of people rely on available content
in social media in their decisions. In addition, written reviews also help service
providers to enhance the quality of their products and services. The fact that anyone with any
identity can leave comments as review, provides a tempting
opportunity for spammers to write fake reviews designed to
mislead users? opinion. These misleading reviews are then
multiplied by the sharing function of social media and propagation
over the web.               </p>

</div>

</div>

<div class="col-md-6 col-sm-6 col-xs-12">

<div class="slider-area">

<div id="carousel-example-generic" class="carousel slide" data-ride="carousel" data-
interval="3000">

<!-- Indicators -->

<ol class="carousel-indicators">

<li data-target="#carousel-example-generic" data-slide-to="0" class="active"></li>

<li data-target="#carousel-example-generic" data-slide-to="1"></li>

<li data-target="#carousel-example-generic" data-slide-to="2"></li>
```

```html
<li data-target="#carousel-example-generic" data-slide-to="3"></li>
            </ol><!-- Wrapper for slides -->
<div class="carousel-inner" role="listbox">
<div class="item active"><img src="assets/images/g.gif" alt="" />
</div>
<div class="item"><img src="assets/images/g7.gif" alt="" />
</div>
<div class="item">
<img src="assets/images/g2.gif" alt="" />
</div>
<div class="item">
<img src="assets/images/g8.gif" alt="" />
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</div>
</header>
<!-- Sections -->
<!--Footer-->
<footer id="footer" class="footer">
<div class="container">
<div class="row">
<div class="main-footer">
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
```

```html
<h2>PRODUCTS</h2>

<ul>
<li><a href="#">GADGETS</a></li>
<li><a href="#">FASHION</a></li>
<li><a href="#">ACCESSORIES</a></li>
</ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>ABOUT</h2>
<ul>
<li><a href="#">The Company</a></li>
<li><a href="#">History</a></li>
<li><a href="#">Vision</a></li>
</ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>CONTACT</h2>
<ul>
<li><a href="#">Basic Info</a></li>
<li><a href="#">Map</a></li>
<li><a href="contact.jsp">Conctact Form</a></li>
</ul>
</div>
</div>
</div>
```

```html
<div class="socio-copyright">
<div class="social">
<a target="_blank" href="#"><i class="fa fa-facebook"></i></a>
<a target="_blank" href="#"><i class="fa fa-twitter"></i></a>
<a target="_blank" href="#"><i class="fa fa-google-plus"></i></a>
<a target="_blank" href="#"><i class="fa fa-linkedin"></i></a>

</div>
<p>Made with <i class="fa fa-heart"></i> by <a target="_blank" href="http://bootstrapthemes.co">
Bootstrap Themes </a>2016. All rights reserved.</p>

</div>

</div>

</div>

</footer>

<script src="assets/js/vendor/jquery-1.11.2.min.js"></script>

<script src="assets/js/vendor/bootstrap.min.js"></script>

<script src="assets/js/plugins.js"></script>

<script src="assets/js/main.js"></script>

</body>

</html>
```

LoginDetails

```html
<%@page import="java.sql.ResultSet"%>

<%@include file="connection.jsp" %>

<!doctype html>

<!--[if lt IE 7]><html class="no-js lt-ie9 lt-ie8 lt-ie7" lang=""><![endif]-->

<!--[if IE 7]><html class="no-js lt-ie9 lt-ie8" lang=""><![endif]-->

<!--[if IE 8]><html class="no-js lt-ie9" lang=""><![endif]-->

<!--[if gt IE 8]><!--><html class="no-js" lang=""><!--<![endif]-->

<head>

<meta charset="utf-8">
```

35

```html
<meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
<title></title>
<meta name="description" content="">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="apple-touch-icon" href="apple-touch-icon.png">
<link rel="stylesheet" href="assets/css/bootstrap.min.css">
<!--     <link rel="stylesheet" href="assets/css/bootstrap-theme.min.css">--
        <!--For Plugins external css-->
<link rel="stylesheet" href="assets/css/plugins.css" />
<!--Theme custom css -->
<link rel="stylesheet" href="assets/css/style.css">
<!--Theme Responsive css-->
<link rel="stylesheet" href="assets/css/responsive.css" />
<script src="assets/js/vendor/modernizr-2.8.3-respond-1.4.2.min.js"></script>
<%
        if(request.getParameter("submit") != null)
    {
       String uname=session.getAttribute("un").toString();
       String pass=session.getAttribute("pass").toString();
       String id=session.getAttribute("id").toString();
       String skey=request.getParameter("skey");
String query="select * from register where uname='"+uname+"' and pass='"+pass+"' and
skey='"+skey+"' and status=1 ";
   ResultSet rs=st.executeQuery(query);
   if(rs.next())
   {
     int rs1=st.executeUpdate("update register set s1=1 where id='"+id+"'");
     session.setAttribute("name", uname);
     response.sendRedirect("user_home_main.jsp");
```

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```
        }

    else

    {

        out.println("<script> alert('Invalid key') </script>");

        out.println("<script>window.location='user_login.jsp' </script>");

            }
    }
        %>

<head>

<body data-spy="scroll" data-target="#main-navbar">

<--[if lt IE 8]>

<p class="browserupgrade">You are using an <strong>outdated</strong> browser. Please <a
href="http://browsehappy.com/">upgrade your browser</a> to improve your experience.</p>

<![endif]-->

        <style>

.button {

    background-color: #4CAF50;

    border: none;

    color: white;

    padding: 15px 32px;

    text-align: center;

    text-decoration: none;

    display: inline-block;

    font-size: 16px;

    margin: 4px 2px;

    cursor: pointer;

}

<style>
            <div class='preloader'><div class='loaded'> </div></div>
<div id="menubar" class="main-menu">
<nav class="navbar navbar-default navbar-fixed-top">
```

37

```html
<div class="container">
<!-- Brand and toggle get grouped for better mobile display -->
<div class="navbar-header">
<button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#bs-example-navbar-collapse-1" aria-expanded="false">
<span class="sr-only">Toggle navigation</span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
</button>
<h2>SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB</h2></div>

<!-- Collect the nav links, forms, and other content for toggling -->
<div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">
<ul class="nav navbar-nav navbar-right">
<li class="active"><a href="index.jsp">Home<span class="sr-only">(current)</span></a></li>
<li><a href="admin_login.jsp">Admin</a></li>
<li><a href="user_login.jsp">User</a></li>
<div class="contact-number text-right">
</div>
</ul>

</div><!-- /.navbar-collapse -->
</div><!-- /.container-fluid -->
</nav>
</div>

<!--Home page style-->
<br/><br/><br/><br/>
<section id="our-history" class="sections">
<div class="container">
<div class="row">
```

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```html
<div class="main-history">
<div class="col-md-6 col-sm-12 col-xs-12">
<div class="history-img">
<img src="assets/images/uu.gif" alt="" />

</div>

</div>
<div class="col-md-6 col-sm-12 col-xs-12">

<div class="history-wrapper">

<div class="history-heading">

<h5 class="our-history">User Login</h5>

</div>

<div class="history-content">

<center>

<form action="#" method="post">

<input type="text" name="skey" placeholder="Secret Key.."style="font-family:
serif;color:#000000;padding-left:10px;width: 240px;height:33px; "><br/><br/>

<input type="submit"  class="button" value="submit" name="submit">

<br/><br/>

<br/>

</form></center>

</div>

</div>

</div>

</div>

</div>

</div>

</section>

<!-- Sections -->

<!--Footer-->
```

```html
<footer id="footer" class="footer">
<div class="container">
<div class="row">
<div class="main-footer">
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>PRODUCTS</h2>

<ul>
<li><a href="#">GADGETS</a></li>

<li><a href="#">FASHION</a></li>

<li><a href="#">ACCESSORIES</a></li>

</ul>

</div>

</div>

<div class="col-md-3 col-sm-6 col-xs-12">

<div class="footer-item">

<h2>ABOUT</h2>

<ul>

<li><a href="#">The Company</a></li>

<li><a href="#">History</a></li>

<li><a href="#">Vision</a></li>

</ul>

</div>

</div>

<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>CONTACT</h2>
<ul>

<li><a href="#">Basic Info</a></li>
```

```html
<li><a href="#">Map</a></li>
<li><a href="#">Conctact Form</a></li>

</ul>

</div>

</div>

</div>
<div class="socio-copyright">

<div class="social">

<a target="_blank" href="#"><i class="fa fa-facebook"></i></a>

<a target="_blank" href="#"><i class="fa fa-twitter"></i></a>

<a target="_blank" href="#"><i class="fa fa-google-plus"></i></a>

<a target="_blank" href="#"><i class="fa fa-linkedin"></i></a>

</div>

<p>Made with <i class="fa fa-heart"></i> by <a target="_blank" href="http://bootstrapthemes.co">
Bootstrap Themes </a>2016. All rights reserved.</p>

</div>

</div>

</div>

</footer>

<script src="assets/js/vendor/jquery-1.11.2.min.js"></script>

<script src="assets/js/vendor/bootstrap.min.js"></script>

<script src="assets/js/plugins.js"></script>

<script src="assets/js/main.js"></script>

</body>

</html>
```

REGISTER

```jsp
<%@include file="connection.jsp" %>
<!doctype html>
<!--[if lt IE 7]><html class="no-js lt-ie9 lt-ie8 lt-ie7" lang=""><![endif]-->
```

```html
<!--[if IE 7]><html class="no-js lt-ie9 lt-ie8" lang=""><![endif]-->
<!--[if IE 8]><html class="no-js lt-ie9" lang=""><![endif]-->
<!--[if gt IE 8]><!--><html class="no-js" lang=""><!--<![endif]-->

<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">

<title></title>
<meta name="description" content="">
<meta name="viewport" content="width=device-width, initial-scale=1">

<link rel="apple-touch-icon" href="apple-touch-icon.png">

<link rel="stylesheet" href="assets/css/bootstrap.min.css">

<!--    <link rel="stylesheet" href="assets/css/bootstrap-theme.min.css">-->

<!--For Plugins external css-->

<link rel="stylesheet" href="assets/css/plugins.css" />

<!--Theme custom css -->

<link rel="stylesheet" href="assets/css/style.css">

<!--Theme Responsive css-->

<link rel="stylesheet" href="assets/css/responsive.css" />

<script src="assets/js/vendor/modernizr-2.8.3-respond-1.4.2.min.js"></script>

</head>

<body data-spy="scroll" data-target="#main-navbar">

<!--[if lt IE 8]>

<p class="browserupgrade">You are using an <strong>outdated</strong> browser. Please <a
href="http://browsehappy.com/">upgrade your browser</a> to improve your experience.</p>
<![endif]-->

        <style>
button {

background-color: #4CAF50;

border: none;
```

42

```css
color: white;
padding: 15px 32px;
text-align: center;
text-decoration: none;
display: inline-block;
font-size: 16px;
margin: 4px 2px;
cursor: pointer;

}
</style>
```

```html
            <div class='preloader'><div class='loaded'> </div></div>

<div id="menubar" class="main-menu">

<nav class="navbar navbar-default navbar-fixed-top">

<div class="container">

<!-- Brand and toggle get grouped for better mobile display -->

<div class="navbar-header">

<button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#bs-example-navbar-collapse-1" aria-expanded="false">

<span class="sr-only">Toggle navigation</span>

<span class="icon-bar"></span>

<span class="icon-bar"></span>

<span class="icon-bar"></span>

</button>

<h2>SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB</h2>

</div>

<!-- Collect the nav links, forms, and other content for toggling -->
<div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">
<ul class="nav navbar-nav navbar-right">
```

```
<li class="active"><a href="registered_user.jsp">Registered User<span class="sr-
only">(current)</span></a></li>
<li><a href="view_user.jsp">View User</a></li>
<li><a href="add_product.jsp">Add Product</a></li>
<li><a href="view_products.jsp">View Products</a></li>
<li><a href="view_review.jsp">View Review</a></li>
<li><a href="block_spam.jsp"> Spam</a></l<li><a href="block_user.jsp"> Spam User</a></li>
<li><a href="graph.jsp"> Graph Analysis</a></li>
<li><a href="admin_login.jsp">Logout</a></li>
<div class="contact-number text-right">
</div></ul>
</div><!-- /.navbar-collapse -->
</div><!-- /.container-fluid -->
</nav>
</div>
<!--Home page style-->
<br/><br/><br/><br/>
<section id="our-history" class="sections">
<div class="container">
<div class="row">
<div class="main-history">
<div class="col-md-6 col-sm-12 col-xs-12">
<div class="history-img">
<img src="assets/images/a.gif" height="300" width="600" />
</div>
</div>
<div class="col-md-6 col-sm-12 col-xs-12">
<div class="history-wrapper">
<div class="history-heading">
```

```html
<br/><br/>

</div>
<div class="history-content">
<p> Network administrators are for making sure that computer hardware and network infrastructure
related to an organization's data network are effectively maintained. Identifying these spammers and
the spam content is a hot topic
of research and although a considerable number of studies have
been done recently toward this end, but so far the methodologies.
put forth still barely detect spam reviews
</p>
</div>
</div>
</div>
</div>
</div>

<br/><br/><br/><br/>

<h3 class="text-size-40 margin-bottom-20 text-dark text-center">Registered Users</h3>
<table align="center" border="1px" width="590px">
<tr>
<th>s.no</th>
<th> Name</th>
<th>User Name</th>
<th>Email</th>
<th>Action</th>
<tr>
<%

    int i=0;

    String query="select *from register where status=0";
    ResultSet a=st.executeQuery(query);
    while(a.next())
```

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```jsp
{
    String uname=a.getString("uname").toString();
    String email=a.getString("email").toString();
    int id=a.getInt("id");
    i++;   %>
<tr><td><%= i%></td>
<td><%=a.getString("name")%></td>
<td><%=a.getString("uname")%></td>
<td><%=a.getString("email")%></td>
<td><a href="registered_user1.jsp?uname=<%=uname%>&email=<%=email %>&id=<%=id%>
>Activate</a></td>

<tr>

<%

}
%></table></div>

</section>

<!-- Sections -->

<!--Footer-->

<footer id="footer" class="footer">

<div class="container">

<div class="row">

<div class="main-footer">

<div class="col-md-3 col-sm-6 col-xs-12">

<div class="footer-item">

<h2>PRODUCTS</h2>

<ul>

<li><a href="#">GADGETS</a></li>
<li><a href="#">FASHION</a></li>
<li><a href="#">ACCESSORIES</a></li>
```

```html
</ul>

</div>

</div>
<div class="col-md-3 col-sm-6 col-xs-12">

<div class="footer-item">

<h2>ABOUT</h2>

<ul>
<li><a href="#">The Company</a></li>

<li><a href="#">History</a></li>

<li><a href="#">Vision</a></li>

</ul>

</div>

</div>

<div class="col-md-3 col-sm-6 col-xs-12">

<div class="footer-item">

<h2>CONTACT</h2>

<ul>

<li><a href="#">Basic Info</a></li>

<li><a href="#">Map</a></li>

<li><a href="#">Conctact Form</a></li>

</ul>

</div>

</div>

</div>

<div class="socio-copyright">

<div class="social">

<a target="_blank" href="#"><i class="fa fa-facebook"></i></a>

<a target="_blank" href="#"><i class="fa fa-twitter"></i></a>

<a target="_blank" href="#"><i class="fa fa-google-plus"></i></a>
```

```html
<a target="_blank" href="#"><i class="fa fa-linkedin"></i></a>

</div>
<p>Made with <i class="fa fa-heart"></i> by <a target="_blank" href="http://bootstrapthemes.co">
Bootstrap Themes </a>2016. All rights reserved.</p>

</div>

</div>

</div>

</footer>
<script src="assets/js/vendor/jquery-1.11.2.min.js"></script>
<script src="assets/js/vendor/bootstrap.min.js"></script>
<script src="assets/js/plugins.js"></script>
<script src="assets/js/main.js"></script>

</body>

</html>

<%@include file="connection.jsp" %>

<%@page import="javax.mail.PasswordAuthentication"%>

<%@page import="javax.mail.MessagingException"%>

<%@page import="javax.mail.Transport"%>

<%@page import="javax.mail.internet.MimeMessage"%>

<%@page import="javax.mail.internet.InternetAddress"%>

<%@page import="javax.mail.Message"%>

<%@page import="java.util.*"%>

<%@page import="javax.mail.Session"%>

<%@page import="java.util.Properties"%<%

    String uname=request.getParameter("uname");
    String email=request.getParameter("email");
    String id=request.getParameter("id");
    String n="http://localhost:8080/I_Injection/user_activate.jsp?id="+id+"";
    Properties props = new Properties();
```

```
props.put("mail.smtp.host", "smtp.gmail.com");

props.put("mail.smtp.socketFactory.port", "465");

props.put("mail.smtp.socketFactory.class","javax.net.ssl.SSLSocketFactory");

props.put("mail.smtp.auth", "true");

props.put("mail.smtp.port", "465");

            Session mailSession = Session.getInstance(props,newjavax.mail.Authenticator()

        {

protectedPasswordAuthenticationgetPasswordAuthentication()

        {

return new PasswordAuthentication("jspcodemail","gmailpassword123456");

            }

        });

try

        {

            Message message = new MimeMessage(mailSession );

message.setFrom(new InternetAddress("from@no-spam.com"));

message.setRecipients(Message.RecipientType.TO,

InternetAddress.parse((email)));

message.setSubject("Hai"+" "+uname);

message.setText("\n\n "+ n);

Transport.send(message);

System.out.println("Done");

        }

catch (MessagingException e)

        {

        //  throw new RuntimeException(e);

id="+id+".   }    String query="update register set status=1 where uname="+uname+" and

stmt.executeUpdate(query);
```

```jsp
response.sendRedirect("registered_user.jsp");

%>

USER

<%@include file="connection.jsp" %>

<!doctype html>
<!--[if lt IE 7]><html class="no-js lt-ie9 lt-ie8 lt-ie7" lang=""><![endif]-->
<!--[if IE 7]><html class="no-js lt-ie9 lt-ie8" lang=""><![endif]-->
<!--[if IE 8]><html class="no-js lt-ie9" lang=""><![endif]-->
<!--[if gt IE 8]><!--><html class="no-js" lang=""><!--<![endif]-->

<head>

<meta charset="utf-8">

<meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">

<title></title>

<meta name="description" content="">

<meta name="viewport" content="width=device-width, initial-scale=1">

<link rel="apple-touch-icon" href="apple-touch-icon.png">

<link rel="stylesheet" href="assets/css/bootstrap.min.css">

<!--    <link rel="stylesheet" href="assets/css/bootstrap-theme.min.css">-->

<!--For Plugins external css-->

<link rel="stylesheet" href="assets/css/plugins.css" />

<!--Theme custom css -->

<link rel="stylesheet" href="assets/css/style.css">

<!--Theme Responsive css-->

<link rel="stylesheet" href="assets/css/responsive.css" />
<script src="assets/js/vendor/modernizr-2.8.3-respond-1.4.2.min.js"></script>
<script type="text/javascript"
src="http://ajax.googleapis.com/ajax/libs/jquery/1.9.1/jquery.min.js"></script>
<script type="text/javascript" src="http://ajax.googleapis.com/ajax/libs/jqueryui/1.10.2/jquery-
ui.min.js"></script>
<script>
```

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```
</style> <div class='preloader'><div class='loaded'> </div></div>

<div id="menubar" class="main-menu">

<nav class="navbar navbar-default navbar-fixed-top">

<div class="container">

<!-- Brand and toggle get grouped for better mobile display -->

<div class="navbar-header">

<button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#bs-example-navbar-collapse-1" aria-expanded="false">

<span class="sr-only">Toggle navigation</span>

<span class="icon-bar"></span>

<span class="icon-bar"></span>

<span class="icon-bar"></span>

</button>

<h2>SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB</h2>

</div>

<!-- Collect the nav links, forms, and other content for toggling -->

<div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">

<ul class="nav navbar-nav navbar-right">

<li><a href="user_home_main.jsp">View Category</a></li>

<li><a href="user_home.jsp">View Products</a></li>

<li><a href="user_review.jsp">User Review</a></li>

<li><a href="user_login.jsp">Logout</a></li>

<div class="contact-number text-right">

</div>

</ul>

</div><!-- /.navbar-collapse -->

</div><!-- /.container-fluid -->

</nav>

</div>
```

```html
<--Home page style-->
<br/><br/><br/>
<section id="works-area" class="sections">
<div class="container text-center">
<div class="heading">
<div class="title text-center arrow-left">
<img class="hidden-xs" src="assets/images/left-arrow.png" alt="" /><h4 class="">Our Products</h4>
</div>
</div>
<div class="row">
<div class="col-md-12 col-sm-12 col-xs-12">
<div class="main-works">
<center><table border="1px" width="500px" height="80px">
<tr>
<th>s.no</th>
<th>Product</th>
<th> Product Name</th>
<th>Company</th>
<th>Price</th>
<th>Action</th>
<tr>
<%
int i=0;  String query="select * from admin_product order by scount  desc";
  ResultSet a=st.executeQuery(query);
  while(a.next())
  {
   int id=a.getInt("id");
   String pname =a.getString("pname");
```

```jsp
String company=a.getString("company");

String category=a.getString("category");

String price =a.getString("price");

String descrip =a.getString("descrip");

i++;

%>

<tr><td><%=i%></td>

<td style="float:left; padding: 40px;"><img src="photos/<%= a.getString("pname")%>.<%=
a.getString("ext")%>" width="50" height="100"/></td>

<td><%=pname%></td>

<td><%=company%></td>

<td><%=price%></td>

<td align="left"><a
href="user_home1.jsp?pname=<%=pname%>&company=<%=company%>&descrip=<%=descrip%
>&price=<%=price%>&id=<%=id%>&ext=<%= a.getString("ext")%>">Buy</a></td>

</tr>

<%

}

%>

</table></center>

</div>

</div>

</div>

</div>

</section>

<!-- Sections -->

<!--Footer-->

<footer id="footer" class="footer">

<div class="container">

<div class="row">
```

```html
<div class="main-footer">
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>PRODUCTS</h2>

<ul>
<li><a href="#">GADGETS</a></li>
<li><a href="#">FASHION</a></li>
<li><a href="#">ACCESSORIES</a></li>

<ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>ABOUT</h2>
<ul>
<li><a href="#">The Company</a></li>
<li><a href="#">History</a></li>
<li><a href="#">Vision</a></li>
<ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>CONTACT</h2>
<ul>
<li><a href="#">Basic Info</a></li>
<li><a href="#">Map</a></li>
<li><a href="#">Conctact Form</a></li>
<ul>
```

```html
<div>

<div>

<div>

<div class="socio-copyright">

<div class="social">

<a target="_blank" href="#"><i class="fa fa-facebook"></i></a><a target="_blank" href="#"><i class="fa fa-twitter"></i></a>

<a target="_blank" href="#"><i class="fa fa-google-plus"></i></a>

<a target="_blank" href="#"><i class="fa fa-linkedin"></i></a>

</div>

<p>Made with <i class="fa fa-heart"></i> by <a target="_blank" href="http://bootstrapthemes.co">
Bootstrap Themes </a>2016. All rights reserved.</p></div>

</div>

</div>

</footer>

<script src="assets/js/vendor/jquery-1.11.2.min.js"></script>

<script src="assets/js/vendor/bootstrap.min.js"></script>

<script src="assets/js/plugins.js"></script>

<script src="assets/js/main.js"></script>

<body>

<html>

<!doctype html>

<!--[if lt IE 7]><html class="no-js lt-ie9 lt-ie8 lt-ie7" lang=""><![endif]-->
<!--[if IE 7]><html class="no-js lt-ie9 lt-ie8" lang=""><![endif]-->
<!--[if IE 8]><html class="no-js lt-ie9" lang=""><![endif]-->
<!--[if gt IE 8]><!--><html class="no-js" lang=""><!--<![endif]-->

<head>

<meta charset="utf-8">

<meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">

<title></title>
```

```html
<meta name="description" content="">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="apple-touch-icon" href="apple-touch-icon.png">
<link rel="stylesheet" href="assets/css/bootstrap.min.css">
<link rel="stylesheet" href="assets/css/bootstrap-theme.min.css">-->
<!--<link rel="stylesheet" href="assets/css/bootstrap-theme.min.css">-->

<!--For Plugins external css-->
<link rel="stylesheet" href="assets/css/plugins.css" />

<!--Theme custom css -->
<link rel="stylesheet" href="assets/css/style.css">

<!--Theme Responsive css-->
<link rel="stylesheet" href="assets/css/responsive.css" />

<script src="assets/js/vendor/modernizr-2.8.3-respond-1.4.2.min.js"></script>

<script type="text/javascript"
src="http://ajax.googleapis.com/ajax/libs/jquery/1.9.1/jquery.min.js"></script>

<script type="text/javascript" src="http://ajax.googleapis.com/ajax/libs/jqueryui/1.10.2/jquery-
ui.min.js"></script>

<script>

$(document).ready(function()

{

  $("#file").on('change',function()

  {

var filename = $('input[type=file]').val().split('\\').pop();

fileExtension = filename.replace(/^.*\./, '');

    $("#ext").val(fileExtension);

  });

});

</script>

</head>

<body data-spy="scroll" data-target="#main-navbar">
<!--[if lt IE 8]>
```

```html
class="browserupgrade">You are using an <strong>outdated</strong> browser. Please <a
="http://browsehappy.com/">upgrade your browser</a> to improve your experience.</p>
ndif]-->
    <style>

tton {

ground-color: #4CAF50;

der: none;

or: white;

ding: 15px 32px;

-align: center;

-decoration: none;

play: inline-block;

t-size: 16px;

rgin: 4px 2px;

rsor: pointer;



style>

                <div class='preloader'><div class='loaded'> </div></div>
div id="menubar" class="main-menu">

nav class="navbarnavbar-default navbar-fixed-top">

div class="container">

- Brand and toggle get grouped for better mobile display -->

div class="navbar-header">

button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#bs-
xample-navbar-collapse-1" aria-expanded="false">

span class="sr-only">Toggle navigation</span>

span class="icon-bar"></span>

span class="icon-bar"></span>

span class="icon-bar"></span>

</button>
```

```html
<h2>SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB</h2>

<div>
<!-- Collect the nav links, forms, and other content for toggling -->
<div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">
<ul class="navnavbar-navnavbar-right">
<li><a href="user_home_main.jsp">View Category</a></li>
<li><a href="user_home.jsp">View Products</a></li>
<li><a href="user_review.jsp">User Review</a></li>
<li><a href="user_login.jsp">Logout</a></li>
<div class="contact-number text-right">

</div>

</ul>

<div><!-- /.navbar-collapse -->

<div><!-- /.container-fluid -->

<nav>

<div>

<!--Home page style-->

<br/><br/><br/><br/>

<section id="works-area" class="sections">

<div class="container text-center">

<div class="heading">

<div class="title text-center arrow-left">

<img class="hidden-xs" src="assets/images/left-arrow.png" alt="" />

<h4 class="">Our Products</h4>
<div>

</div>

<div class="row">

<div class="col-md-12 col-sm-12 col-xs-12">
```

59

```jsp
<div class="main-works"><%
String pname=request.getParameter("pname");
String price=request.getParameter("price");
String descrip=request.getParameter("descrip");
String company=request.getParameter("company");
String ext=request.getParameter("ext");
String id=request.getParameter("id");
%>
<img src="photos/<%= pname%>.<%= ext%>" width="250" height="200"/><br/><br/>
<b><%=descrip%></b><br/><br/>
<b>Product Name ::</b><%=pname%><br/><br/>
<b>Company Name :: </b><%=company%><br/><br/>
<b> Price :: </b><%=price%><br/><br/>
<form action="user_home2.jsp" method="post">
<input type="hidden" value="<%= pname%>"name="pname">
<input type="hidden" value="<%= company%>" name="company">
<input type="hidden" value="<%= price%>"name="price">
<input type="hidden" value="<%= descrip%>"name="descrip">
<input type="hidden" value="<%= ext%>"name="ext">
<input type="hidden" value="<%= id%>"name="id">
<input type="submit" name="submit" value="Buy"/><br/><br/>
<!--<a href="delivery.jsp">Buy</a>-->
<%

%></table></center>
<center><table>
<%

    String query="select * from user_review where pname='"+pname+"' and
company='"+company+"' and price='"+price+"' and status=0";
ResultSet a=st.executeQuery(query);
```

60

```jsp
while(a.next())
{
String review =a.getString("review");
String name=a.getString("name");
String datee=a.getString("datee");
%>

<b><b>User Name ::</b><%=name%></td><br/><td style="color:white;">......</td>
<b><b> Review ::   </b><%=review%></td><td
style="color:white;">......</td><td><b><%=datee%></b></td>
<b><br/>
<%
}
%>
</table></center>
<div>
<div>
<div>
<div>
<section>
<!-- Sections --><!--Footer-->
<footer id="footer" class="footer">
<div class="container"><div class="row">
<div class="main-footer">
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>PRODUCTS</h2>
<ul>
<li><a href="#">GADGETS</a></li>
```

```html
<li><a href="#">FASHION</a></li>
<li><a href="#">ACCESSORIES</a></li>
</ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>ABOUT</h2>
<ul>
<li><a href="#">The Company</a></li>
<li><a href="#">History</a></li>
<li><a href="#">Vision</a></li>
</ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>CONTACT</h2>
<ul>
<li><a href="#">Basic Info</a></li>
<li><a href="#">Map</a></li>
<li><a href="#">Conctact Form</a></li>
</ul>
</div>
</div>
</div>
<div class="socio-copyright">
<div class="social">
<a target="_blank" href="#"><i class="fafa-facebook"></i></a>
```

```html
<a target="_blank" href="#"><i class="fafa-twitter"></i></a>
<a target="_blank" href="#"><i class="fafa-google-plus"></i></a>
<a target="_blank" href="#"><i class="fafa-linkedin"></i></a>
<a target="_blank" href="#"><i class="fafa-linkedin"></i></a>
</div>
<p>Made with <i class="fafa-heart"></i> by <a target="_blank" href="http://bootstrapthemes.co">
Bootstrap Themes </a>2016. All rights reserved.</p>
</div>

</div>

</div>
<footer><script src="assets/js/vendor/jquery-1.11.2.min.js"></script>
<script src="assets/js/vendor/bootstrap.min.js"></script>
<script src="assets/js/plugins.js"></script>
<script src="assets/js/main.js"></script>

</body>

</html>

ADMIN

<!doctype html>
<!--[if lt IE 7]><html class="no-js lt-ie9 lt-ie8 lt-ie7" lang=""><![endif]-->
<!--[if IE 7]><html class="no-js lt-ie9 lt-ie8" lang=""><![endif]-->
<!--[if IE 8]><html class="no-js lt-ie9" lang=""><![endif]-->
<!--[if gt IE 8]><!--><html class="no-js" lang=""><!--<![endif]-->
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1">
<title></title>
<meta name="description" content="">
<meta name="viewport" content="width=device-width, initial-scale=1">
<link rel="apple-touch-icon" href="apple-touch-icon.png">
<link rel="stylesheet" href="assets/css/bootstrap.min.css">
```

```html
link rel="stylesheet" href="assets/css/bootstrap-theme.min.css">-->
gins external css-->
stylesheet" href="assets/css/plugins.css" />
custom css -->
stylesheet" href="assets/css/style.css">
Responsive css-->
stylesheet" href="assets/css/responsive.css" />
="assets/js/vendor/modernizr-2.8.3-respond-1.4.2.min.js"></script>
body data-spy="scroll" data-target="#main-navbar">

E 8]>
browserupgrade">You are using an <strong>outdated</strong> browser. Please <a
p://browsehappy.com/">upgrade your browser</a> to improve your experience.</p>

]-->

<style>

ound-color: #4CAF50;

r: none;

: white;

ing: 15px 32px;

align: center;

decoration: none;

lay: inline-block;

size: 16px;

gin: 4px 2px;

or: pointer;

s

                <div class='preloader'><div class='loaded'> </div></div>
id="menubar" class="main-menu">
```

```html
<nav class="navbar navbar-default navbar-fixed-top">
<div class="container">
<!-- Brand and toggle get grouped for better mobile display -->
<div class="navbar-header">
<button type="button" class="navbar-toggle collapsed" data-toggle="collapse" data-target="#bs-example-navbar-collapse-1" aria-expanded="false">
<span class="sr-only">Toggle navigation</span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
</button>
<h2>SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB</h2>
</div>
<!-- Collect the nav links, forms, and other content for toggling -->
<div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">
<ul class="nav navbar-nav navbar-right">
<li class="active"><a href="index.jsp">Home<span class="sr-only">(current)</span></a></li>
<li><a href="admin_login.jsp">Admin</a></li>
<li><a href="user_login.jsp">User</a></li>
<div class="contact-number text-right">
</div></ul>
</div><!-- /.navbar-collapse -->
</div><!-- /.container-fluid -->
</nav>
</div>

<!--Home page style-->
<br><br/><br/><br/>
<section id="our-history" class="sections">
<div class=
```

```html
<div class="row">
<div class="main-history">
<div class="col-md-6 col-sm-12 col-xs-12">
<div class="history-img">
<img src="assets/images/us.gif" alt="" />
</div>

<div>
<div class="col-md-6 col-sm-12 col-xs-12">
<div class="history-wrapper">
<div class="history-heading">

<br/><br/>

</div>
<div class="history-content">

<center>

<form action="admin_login1.jsp" method="post">

<input type="text" name="uname" placeholder="UserName.."style="padding-left:10px; width:
240px;height:33px; "><br/><br/>

<input type="password" name="pass" placeholder="Password.."style="padding-left:10px;width:
240px;height:33px; "><br/><br/>

<input type="submit"  class="button" value="submit">

<input type="reset" class="button" value="reset"><br/><br/>

<br/>

</form>

</center

</div>

</div>

</div>

</div>

</div>

</div>
```

```html
</section>
<!-- Sections -->

<!--Footer-->
<footer id="footer" class="footer">
<div class="container">
<div class="row">
<div class="main-footer">
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>PRODUCTS</h2>
<ul>
<li><a href="#">GADGETS</a></li>
<li><a href="#">FASHION</a></li>
<li><a href="#">ACCESSORIES</a></li>
</ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>ABOUT</h2>
<ul>
<li><a href="#">The Company</a></li>
<li><a href="#">History</a></li>
<li><a href="#">Vision</a></li>
</ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
```

67

```html
<h2>CONTACT</h2>

<ul>
<li><a href="#">Basic Info</a></li>
<li><a href="#">Map</a></li>
<li><a href="#">Conctact Form</a></li>

</ul>

</div>

</div>

</div>

<div class="socio-copyright">

<div class="social">

<a target="_blank" href="#"><i class="fa fa-facebook"></i></a>

<a target="_blank" href="#"><i class="fa fa-twitter"></i></a>

<a target="_blank" href="#"><i class="fa fa-google-plus"></i></a>

<a target="_blank" href="#"><i class="fa fa-linkedin"></i></a>

</div>

<p>Made with <i class="fa fa-heart"></i> by <a target="_blank" href="http://bootstrapthemes.co">
Bootstrap Themes </a>2016. All rights reserved.</p>

</div>

</div>

</div>

</footer>

<script src="assets/js/vendor/jquery-1.11.2.min.js"></script>

<script src="assets/js/vendor/bootstrap.min.js"></script>

<script src="assets/js/plugins.js"></script>

<script src="assets/js/main.js"></script>

</body>

</html>
```

<h2>SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB</h2>

</div>

<!-- Collect the nav links, forms, and other content for toggling -->

<div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">

<ul class="navnavbar-navnavbar-right">

<li class="active">Registered User(current)

View User

Add Product

View Products

View Review

 Spam

 Spam User

 Graph Analysis

Logout

<div class="contact-number text-right">

</div>

</div><!-- /.navbar-collapse -->

</div><!-- /.container-fluid -->

</nav>

</div>

<!--Home page style-->

<section id="our-history" class="sections">

<div class="container">

<div class="row">

<div class="main-history">

<div class="col-md-6 col-sm-12 col-xs-12">

```html
   class="history-img">
   src="assets/images/a.gif" height="300"width="600" />

/>

/>
 r class="col-md-6 col-sm-12 col-xs-12">
  r class="history-wrapper">
  v class="history-heading">

 ></br>

 div>
 iv class="history-content">
 >    Network administrators are for making sure that computer hardware and network
 infrastructure related to an organization's data network are effectively maintained. Identifying these
 ammers and the spam content is a hot topic

 research and although a considerable number of studies have

 en done recently toward this end, but so far the methodologies.

 t forth still barely detect spam reviews

 p>

 /div>

 /div>

 /div>

 /div>

 /div>

 br/><br/><br/><br/>

 h3 class="text-size-40 margin-bottom-20 text-dark text-center">Activated Users</h3>

 table align="center" border="1px" width="590px"><tr>

 th>s.no</th>

 th> Name</th>

 th>User Name</th>

 th>Email</th>

 tr>
```

```jsp
<%
inti=0;
    String query="select *from register where status=1";
ResultSet a=st.executeQuery(query);
while(a.next())

   {
       String uname=a.getString("uname").toString();
   String email=a.getString("email").toString();

i++;
   %>

<tr><td><%= i%></td>

<td><%=a.getString("name")%></td>

<td><%=a.getString("uname")%></td>

<td><%=a.getString("email")%></td>

</tr>

<%

   }
   %></table>

</div>

</section>

<!-- Sections --><!--Footer-->

<footer id="footer" class="footer">

<div class="container">

<div class="row">

<div class="main-footer">

<div class="col-md-3 col-sm-6 col-xs-12">

<div class="footer-item">

<h2>PRODUCTS</h2>

<ul>
```

```html
<a href="#">GADGETS</a>
<a href="#">FASHION</a></li>
<a href="#">ACCESSORIES</a></li>
</ul>
</div>
<div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>ABOUT</h2>
<ul>
<li><a href="#">The Company</a></li>
<li><a href="#">History</a></li>
<li><a href="#">Vision</a></li>
</ul>
</div>
</div>
<div class="col-md-3 col-sm-6 col-xs-12">
<div class="footer-item">
<h2>CONTACT</h2>
<ul>
<li><a href="#">Basic Info</a></li>
<li><a href="#">Map</a></li>
<li><a href="#">Conctact Form</a></li>
</ul>
</div>
<div></div>
<div class="socio-copyright">
<div class="social">
<a target="_blank" href="#"><i class="fafa-facebook"></i></a>
```

```
ank" href="#"><i class="fafa-twitter"></i></a>
lank" href="#"><i class="fafa-google-plus"></i></a>
lank" href="#"><i class="fafa-linkedin"></i></a>

h <i class="fafa-heart"></i> by <a target="_blank" href="http://bootstrapthemes.co">
emes </a>2016. All rights reserved.</p>
```

```
er>
assets/js/vendor/jquery-1.11.2.min.js"></script>
assets/js/vendor/bootstrap.min.js"></script>
assets/js/plugins.js"></script>
assets/js/main.js"></script>
```

SCREEN
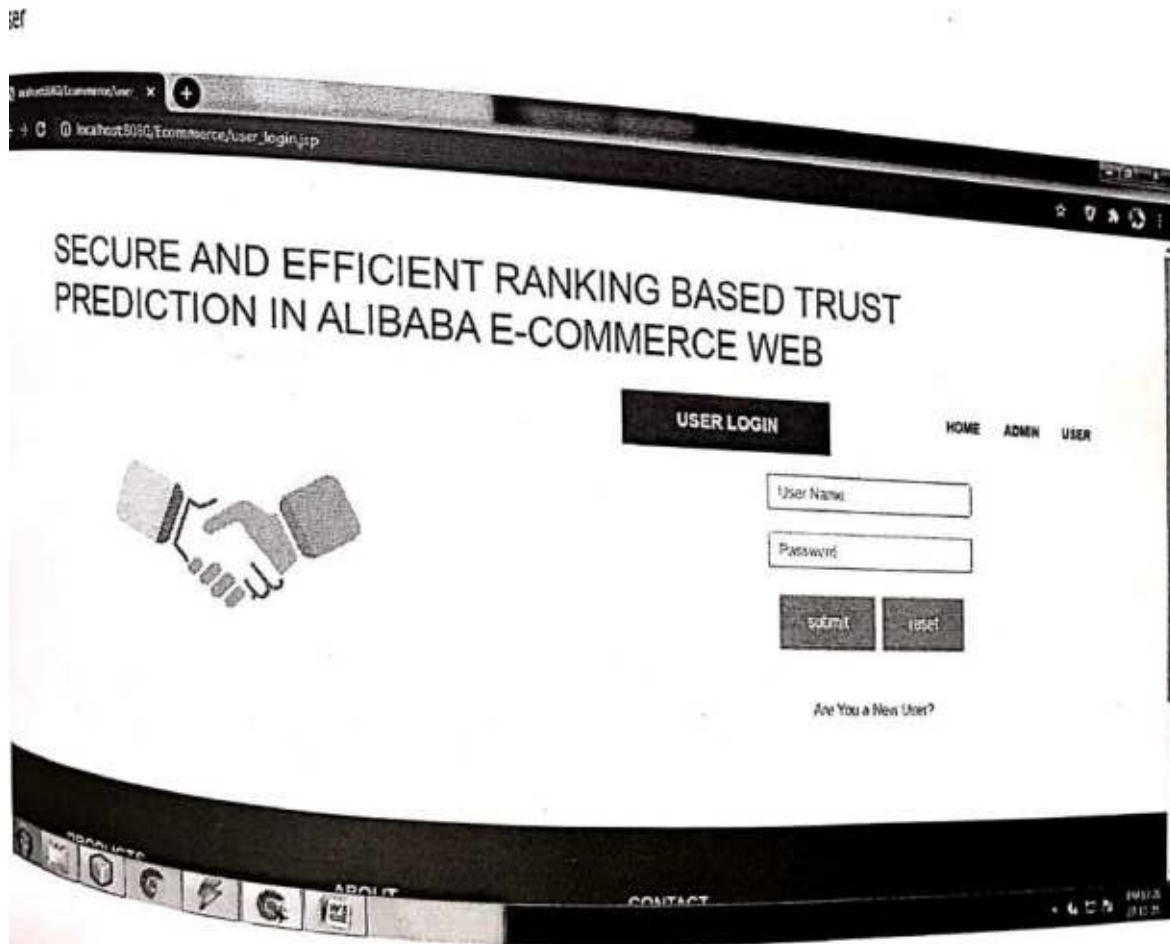
SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

DETECTING SPAM REVIEWS

HOME   ADMIN   USER

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

USER LOGIN

HOME   ADMIN   USER

User Name

Password

submit   reset

Are You a New User?

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

HOME   ADMIN   USER

USER REGISTRATION

g

g

govarchananai@gmail.com

*

submit   reset

Already have a account?

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

HOME   ADMIN   USER

USER LOGIN

gova

----

submit   reset

Are You a New User?

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

VIEW CATEGORY   VIEW PRODUCTS   USER REVIEW   LOGOUT

		apple iphone	apple	40000	Buy
		Indian polity	mc craw gil	250	Buy
		Redmi_3s_prime	xiomi	11000	Buy

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

VIEW CATEGORY   VIEW PRODUCTS   USER REVIEW   LOGOUT

Product Name :: apple iphone

Company Name :: apple

Price :: 40000

Buy

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

VIEW PRODUCTS   USER REVIEW   LOGOUT

HAPPY SHOPPING!!!

Thank You for Shopping. Your Required Product will Deliver with in 2-3 Days.

Back To Shopping

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

VIEW PRODUCTS   USER REVIEW   LOGOUT

OUR PRODUCTS

S.no	Product	Product Name	Company	Price	Action
		Apple iphone	Apple	40000	Review

SECURE AND EFFICIENT RANKING BASED TRUST
PREDICTION IN ALIBABA E-COMMERCE WEB

HAPPY SHOPPING!!!   VIEW PRODUCTS   USER REVIEW   LOGOUT

Thank You for Shopping. Your Required Product will Deliver with in 2-3 Days.

Back To Shopping

SECURE AND EFFICIENT RANKING BASED TRUST
PREDICTION IN ALIBABA E-COMMERCE WEB

OUR PRODUCTS   VIEW PRODUCTS   USER REVIEW   LOGOUT

s.no	Product	Product Name	Company	Price	Action
		apple iphone	apple	40000	Review
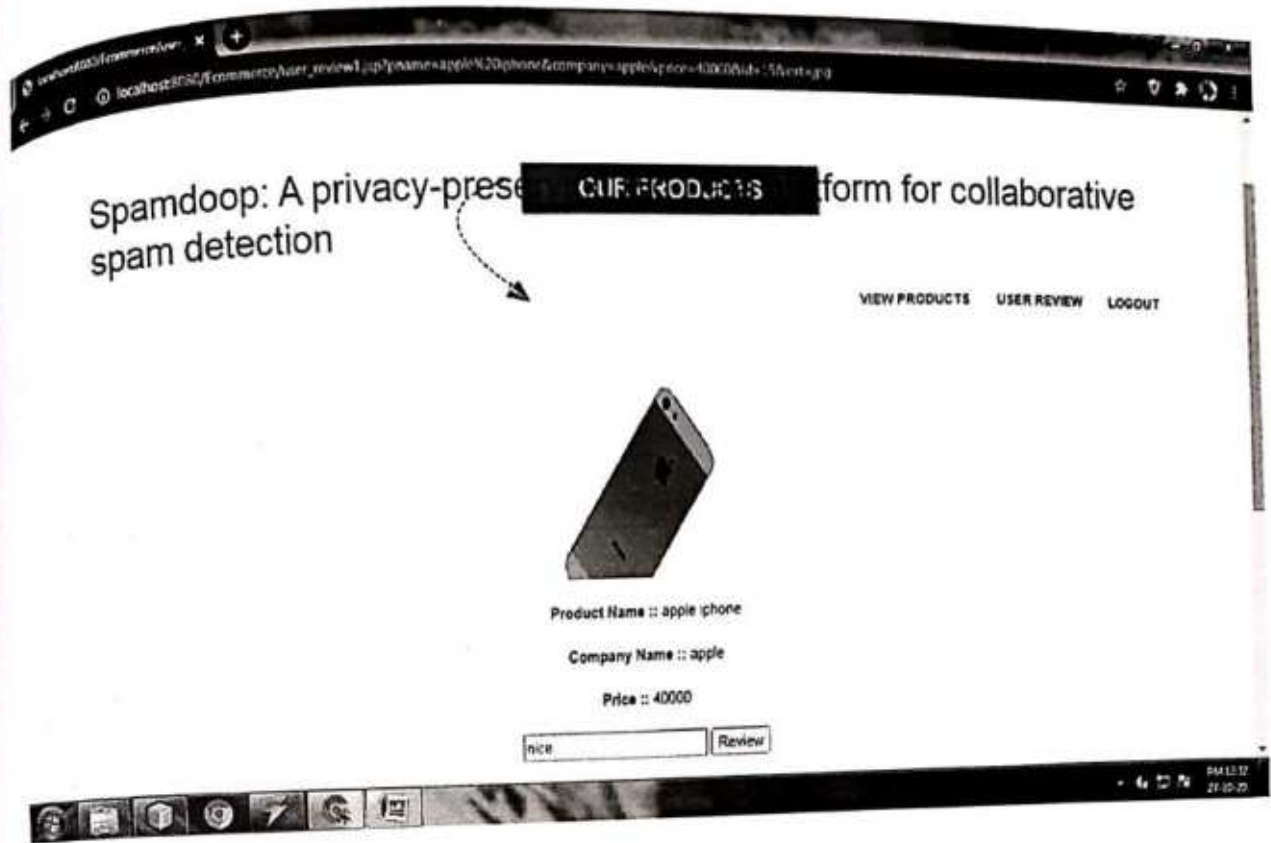
Spamdoop: A privacy-prese **OUR PRODUCTS** form for collaborative
spam detection

Product Name :: apple iphone

Company Name :: apple

Price :: 40000

nice   Review

Admin

SECURE AND EFFICIENT RANKING BASED TRUST
PREDICTION IN ALIBABA E-COMMERCE WEB

admin

.....

submit   reset

SECURE AND EFFICIENT RANKING BASED TRUST PREDICTION IN ALIBABA E-COMMERCE WEB

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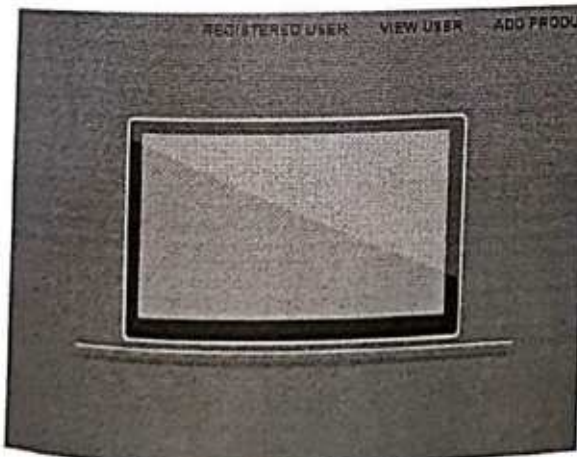
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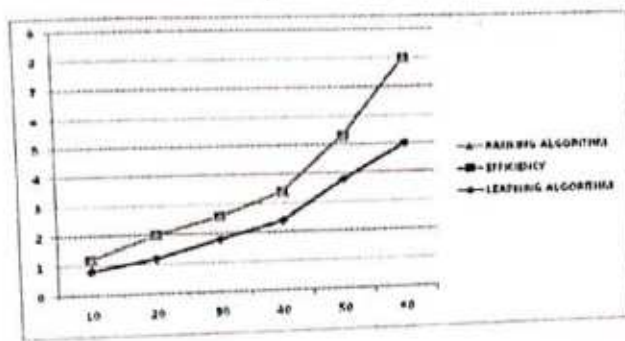
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1	P21050375	R.DIVYABHARATHI	WOMEN AT MARGIN:REFLECTIONS ON MANJU KAPUR'S DIFFICULT DAUGHTERS	Mr.S.KULANDHAIVEL
2	P21050377	S.LAVANYA	QUEST FOR MAGICAL POWER ENCOUNTERED BY HUMAN LOVE-A STUDY ON CHITRA BANERJEE'S THE MISTRESS OF SPICES	Mr.S.KULANDHAIVEL
3	P21050378	S.MOHANAPRIYA	THE ANOTOMY OF YUPPIEDOM IN VIKRAM SETH'S THE GOLDEN GATE	Mrs..J.JAYARASI
4	P21050379	S.SANGEETHAVALLI	BALRAM STRUGGLE TO REACH THE HIGHER SOCIAL STATUS IN ARAVIND ADIGA'S THE WHITE TIGRE	Mrs.J.JAYARASI
5	P21050380	R.SINDHU	JUMPA LAHIRI'S THE LOWLAND-THE TALE OF CHOICE BETWEEN FREEDOM AND DUTY	Ms.S.VENNILA
6.	P21050381	B.VARSHA	THRUST AGAINST SOCIAL DIFFERENCES IN ROHINTON MISTRY'S A FINE BALANCE	Mrs.S.SURYA

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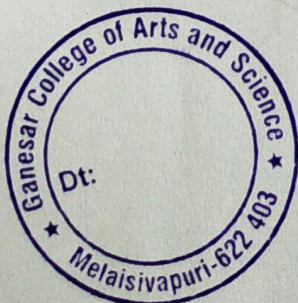
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This is to certify that the project entitled **JHUMPA LAHIRI'S** *THE LOWLAND-* **THE TALE OF CHOICE BETWEEN FREEDOM AND DUTY** submitted by **R. SINDHU** **(Reg. No: P21050380)** Department of English, Ganesar College of Arts and Science, Melasivapuri, is a bonafide record of work done by her under my guidance in partial fulfillment of the requirement of the degree of **MASTER OF ARTS in English**. This project or any part of it has not been submitted elsewhere for any other degree.

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JHUMPA LAHIRI'S *THE LOWLAND* – THE TALE OF CHOICE BETWEEN FREEDOM AND DUTY

Project Report submitted to **BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI**

In partial fulfillment of the requirement for the degree of

MASTER OF ARTS in English

2022 – 2023

Researcher

R. SINDHU

(Reg. No: P 21050380)

Under the guidance of

Prof. **S. VENNILA M.A., M. Phil., B.Ed.,**

DEPARTMENT OF ENGLISH

GANESAR COLLEGE OF ARTS AND SCIENCE

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APRIL – 2023

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CERTIFICATE

This is to certify that the project entitled **JHUMPA LAHIRI'S** *THE LOWLAND-* **THE TALE OF CHOICE BETWEEN FREEDOM AND DUTY** submitted by **R. SINDHU** **(Reg. No: P21050380)** Department of English, Ganesar College of Arts and Science, Melasivapuri, is a bonafide record of work done by her under my guidance in partial fulfillment of the requirement of the degree of **MASTER OF ARTS in English**. This project or any part of it has not been submitted elsewhere for any other degree.

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Place: Melasivapuri

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Pudukkottai District, Tamil Nadu.

DECLARATION

I hereby declare that the project entitled **JHUMPA LAHIRI'S** *THE LOWLAND*- **THE TALE OF CHOICE BETWEEN FREEDOM AND DUTY** submitted for an **M.A** Degree is an original work done by **R.SINDHU (Reg.No:P21050380)**, under the guidance of Prof.S. **VENNILA (Assistant professor of English)** and the project has not formed the basis for the awarded of any other similar titles.

Date: 12- 04- 2023

Place: Melasivapuri

Signature of the candidate

R. Sind

(R. SINDHU)

Signature of the Guide

ACKNOWLEDGEMENT

I thank Bharathidasan University for helping me study **M.A. English.**
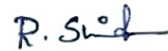
My sincere thanks to **Dr. M. SELVARAJU M.A., M. Phil., Ph.D.** The principal, Ganesar College of Arts and Science, Melasivapuri, for all his guidance and encouragement giving to me during our course of study.

I wish to express my deep gratitude and sincere thanks to my guide and The Head of the Department of English **Prof. S. KULANDHAIVEL M.A., M. Phil., Ph.D.,** Ganesar college of Arts and Science, Melasivapuri, for his concrete guidance and encouragement for the successful completion of this project work.

I Wish to express my gratitude and sincere thanks to my guide **Prof. S. VENNILA M.A., M. Phil., B.Ed.,** Assistance professor, Ganesar college of Arts science, Melasivapuri, for her concrete and encouragement for the successful completion of this project work.

I extend my thanks to all **the staff members of English department** in Ganesar College of Arts and Science, Melasivapuri, for their support and encouragement.

I extend my thanks to my parents and my brother who have helped me to finish this project in a successful way.

R. Sind

R. SINDHU

TEXTUAL NOTE

Reference details have been given within parenthesis as per the rules found in the **MLA** Hand Book.

The following abbreviation have been used in the text for the questions taken from the Primary Source.

THE LOWLAND - TLL

CONTENTS

CHAPTER-1

INTRODUCTION

Literature is the mirror of life. It helps us to understand those things that are not easily understand and comprehended that includes pain, hatred, love, death, war, human, nature sacrifice and more surprisingly truth. Literatures is a reflection of the society is a fact that has been widely acknowledged. Literature allows a person to step back in time and learn about life on earth from the ones who walked before us.

Classical literature refers to the great master pie of Greek, Roman, and other ancient cultures. The works of Homer, Ovid and Sophocles are all examples of classical literature. The term isn't just limited to novels. It can also include epic, lyric, tragedy, comedy, pastoral and other forms of writing. Classical Indian Literature is the study of Sanskrit epics *Ramayana* and *Mahabharata* were subsequently codified and appeared towards the end of the second millennium BCE. The writings of Indian Literature developed rapidly during the first few centuries of the first millennium BCE. The languages depended largely on the ancient Indian background, which includes to Sanskrit poems, the *Mahabharata* and *Ramayana*, as well as the *Bhagavat-Gita* and the other puranas.

From about the 1st century AD there developed a literature in Tamil, which has also persisted in literary use until the present. Much later, from the 12th century on, literatures in several other languages appeared—in Hindi, Bengali, Assamese, Punjabi, and Urdu, among others. And from the 11th century in Islamic Literature. primarily in Persian and Urdu, developed as a result of the 8th-century Islamic conquest of a portion of India.

Early Hindi literature, in dialects like Avadhi and Brai, began around religious and philosophy poetry in medical period. Santkabir and Tulsidas were the greatest exponents of the Hindi literature during this period with the passage of the tim, the Khadibolu (dialect) became more prominent and saw great up surge , which continues to this day.

During the medical period, Muslim literary traditions dominated a large part of Indian Literature and saw flourishing of Muslim literatures. Muslim during the medieval times saw rapid growth and development of Persian and Urdu in India. A huge variety of literature spanning across history, culture and politics was written in this period. With the coming of the British in India, works started to be written in English language. As more and more Indian became well versed with the English language, the number of works in English literature became to grow. Since about 1500 BC India has had a continuous literature in Sanskrit, which still remains a sacred and learned language for Hindus. The impact of the early Literature cannot be overestimated because it had such a powerful impact on later works.

Indian English Literature began as an eventful encounter in the late 18th century between a vigorous and enterprising Britain and a stagnant and chaotic India, and is now nearly two hundred years old. Indian English Literature also referred to as Indian Writing in English. It's also referred to the body of works by authors in India who write in English and whose native or co- native language could be one of the numerous languages of India. It is no part of English Literature any more than American Literature or Australian Literature can be said to be a branch of British Literature.

Indian English Literature also associated with the work of members of Indian diaspora. The very definitions of the adjective "Indian here is hazy. Many of these writers neither live in Indian, nor are Indian citizens. As a category, this production comes under the broader realm of postcolonial Literature – The production from previously colonized Countries such as India. Though one can trace such writers in India to a century back, Indian writing in English has come

into force only in the last couple of decades or so, as far as literature goes. Indian English Literature frequently referred to as Indio – Anglian Literature (Indo – Anglian is a specific term in the sole context of writing that should not be confused with Anglo – Indian) Although some Indio – Anglian works may be classified under the genre of postcolonial Literature, the repertoire of Indian English Literature encompasses a wide variety of themes and ideologies, from the late 18th century to the present day and thereby eludes easy categorization.

The early History began with the works of Henry Louis Vivian Derozio and Michael Madhusudan Duty followed by Rabindranath Tagore and sri Aurobindo, R.K. Narayan, Mulk Raj Anand and Raja Rao contributed to the growth and popularity of Indian English fiction in the 1930s. The Panache of fine Indian writers commencing from, Anita Desai, Toru Dutt, Salman Rushdie, Vikram Seth, Allan Sealy, Amitav Ghosh, Jhumpa Lahiri, Chitra Banerjee Divakaruni, Arundhati Roy, Vikram Chandra.

Indian English Literature has a relatively recent history, being nearly two centuries old. The first book written by an Indian in English was *The Travels of Dean Mahomet*, published in England in 1794. The early stages had influence from the Western novel. Early Indian Writes used English unadulterated by Indian words to convey an experience which was essentially Indian. Bankim Chandra Chattopadhyay (1838 – 1894) wrote *Rajamohan's wife* and published it in 1864, making it the first Indian novel written in English.

Indian English Literature stands tall occupies a place of repute in the world literature circle. It has remarkably acquired to self-sufficient and self-contained status and is known for its wide range of themes and techniques that it encompasses. It exceeds a variety of themes ranging from the rich Indian culture, social and traditional values to multifarious issues like the freedom struggles, nationalism and contemporary modern issues. They deploy various themes and techniques which from the warp and woof of the work of art.

It is significant coincident that of Mulk Raj Anand, R.K. Narayan and Raja Rao are the three major write of Indian novel in English belong to the thirties of the 20th century. Mulk Raj Anand has also been the most prolific, who was born on Peshawar. On his return to India, he come under the influence of Mahatma Gandhi and prepared the first draught of *Untouchable* which depicts the life of a hereditary latrine cleaner. In coolie his next novel he deals with the life of an itinerant labour. In *The Sword and The Sickle*, profit and loss have replaced the traditional moral value in 1937 published *Two Leaves and a Bud* which established his fame. He wrote his novels chiefly in the pre independence days. The relationship between the Sahibs and the natives from an important theme of the novels. In his earlier novels he champions the cause of the the underdogs and points to their dehumanization under the degrading contradictions of cruelty and dirt the superstitions.

R.K. Narayan's themes are dealt with themes like exile and return, education, woman and her status in the society, myths and the ancient Indian past, tradition and moderns, Malgudi and its culture, appearance and reality, the family and so on. In his long career he published fourteen novels over two hundred short stories, memoir, two travel books innumerable essays, and two place. His first novel was *Swami and Friends* (1935) his last published work was *Grandmother's Tale* (1992).

Raja Rao literary journey as an Indian author who wrote in English about Indian Metaphysics can be traced by looking at three of his most popular works *Kandhapura* (1938), *The Serpent and The Rope* (1960), *The Cat and Shakespeare* (1965). He used the ancient puranic method of story-telling rather than follows the western style, according to him puranic method of story-telling is natural and true to nature and true to the atmosphere of India.

Salman Rushdie is best known for his fifth book, the Satanic verses, which promoted a fatwa against him in 1989. In 1975, Rushdie published his first novel Grimus, a science fiction story inspired by the twelfth century sufi poem the conference of the birds, won the Booker prize

in 1981 and was deemed to be "the best novel of all winner". His third novel, Shame, was commonly regarded as political allegory of Pakistani politics. The language, style, theme and narrative technique employed by Rushdie are highly innovative. He says literature as a,

"Literature is where I go to explore the highest and lowest places in human society and in the human spirit, where I hope to find not absolute truth but the truth of the tale, of the imagination of the heart" (salman Rushdie)

Most of the Indian writing in English is penned by Diaspora writers beyond India geographical. The word 'Diaspora' desires from the Greek word meaning "to disperse". Diaspora is simple the displacement of a community or culture into another geographical and culture region. There are two main moves in Diasporic writing. One is Temporal move and the other one is spatial move. There temporal move is looking forward at the future which means prolepsis. The spatial move involves two things: One is De – Terrorization which means the loss of territories and Re- Terrorization which means a restructuring of a place or territory that has experienced De- Terrorization. Therefore, The Diaspora novel involves space, which mores between the country of origin and foreigners between the familiar and unfamiliar, between the old and the new. Diaspora writing in novels, short stories, travel stories, poem and prose is not new to post- colonial literature. The desire for "homeland" or "root", a strange and unusual a Hatchment to their tradition, religions and language gave birth to the so, called Diaspora literature.

Diasporic Literature is very vast concept and an umbrella term that includes in it all those literary works written by the authors outside their native country. But these works are associated with native culture and background. In this wide context; all those writers outside the country. But these works are associated with native culture and background. In this wide context; all those writers can be regarded as Diasporic writers, who write outside the country but remained related to their homeland through their works. Diasporic literature has its roots in the sense of loss and alienation which emerged as a result of migration and expatriation.

Diaspora means the dispersion or scattering of a people **from** their original homeland. A simple definition of Diaspora literature, then, would be works that are written by authors who lived outside of their native land. Some Diaspora communities maintain strong political ties with their homeland. The Indian Diaspora began during the colonial period when the British Empire spread all over the world. The Diaspora could be classified as colonial **and** post- colonial. In the colonial category there was first the laborer and then the entrepreneur Diaspora. Most of the Diaspora's have been well represented in creative writing. These immigrant writes reflect, on one hand, their attachment to their motherland and on the other hand, their feeling of alienation and root lesson.

Indian Diaspora Occupies second largest place in the world. The Population of Diaspora is approximately 25 million, who settled whole notable regions of the word. Indian Immigrants in the free trade, better standards of life and earning. Diasporic or immigrant writing occupies a great place of significance between cultures and countries. Writings Diaspora benefits many ways and a powerful web connects the entire globe. In foremost characteristics features of Diaspora writings involve the quest for identity, nostalgia, familiar and marital relationship apart from re- rooting, uprooting, multi- cultural milieu etc., Some of the most prominent Indian Writers in English belong to the Diaspora. Such as, Kavitha Dadwani, Anita Desai, Bharati Mukherjee, Shauna singh Baldwin, Amitav Ghosh, Anjana Appachana, Sunetra Gupta, Anita Nair, Jhumpa Lahiri and Chitra Banerjee Divakaruni have become prominent writers in the Indian diaspora writing tradition.

Kavitha Dadwani is an Indian-American author. All three of her novels deal with the Indian practice of arranged marriages and features Heroines that refuse to go along with tradition. She grew up in Hong Kong, starting her career at age of seventeen as a journalist for south China Morning post. she has written several novels for grown-ups and young adults that represent her passion and love for the Indian culture. In her books, we see how young Indian girls are trying to break away from their tradition in pursuit of their dreams. She also brings some of her own life's experiences into her books.

Anita Desai was an Englishman language Indian Novelist and Feminist writer and author of children's book who excelled in evoking character and mood through visual image. The entry of Anita Desai gives the birth of an era which promises a new deal of Indian English fiction. She introduce the psychological realism in her first novel 'Cry the peacock' in 1963.She has contributed to the Indian English literature by her valuable novels as Voice in the City (1965), *Bye- Bye Black Bird* (1971), *Where Shall we go this Summer* (1975).

Bharathi Mukherjee widens the autobiographical tradition of ved Mehta in quite different ways. Society is the subject matter of her memoir, days and nights in Calcutta, co-authored with her husband. It is a work in which Mukherjee reveals her nostalgia for her home city. Bharathi Mukherjee is one of the prominent expatriate Writers who reject the tradition – bound society of the East as she reaches out for the more empowering and individualistic society of the west. Her novel The Tiger's Daughter depicts a young women's inserting return home to Calcutta after years abroad. The wife is about the desolation of immigrant women of middle – class Bengali origin devoid of her support structure in a foreign society.

Amitav Ghosh's writing deals in the epic themes of travel and Diaspora, History and memory, political struggle and communal violence, love and love, while all the time crossing the generic boundaries between anthropology and art work. The River of Smoke, a Sequel of A sea of poppies. Both these novels are based on the opium wars between Britain and china in the 19th century, by the holy river Ganga's in Calcutta. The book was nominated for a Man Booker prize in 2008. His famous works are *The Circles of Reasons* (1986), *The Shadow lines* (1988), *The Cal vitta Chromosome* (1995), *The Glass Palace* (2000) and *The Hungry Tide* (2004).

Chitra Banerjee Divakaruni in her novel *The Mistress of Spices* depicts Tilo the protagonist, as an exotic character to reveal the migrant's anguish. Chitra drew on the folktale which she had remembered from her childhood days in Bengal, such as the sleeping city under the ocean and the speaking serpents, but she changes them almost completely in The Mistress of Spices.

The second generation Diasporic Indian Writers like Meerasyal, Shashi Tharoor, Hari Kunzru, Sunetra Gupta, Jhumpa Lahiri, etc. have faithfully demonstrated the lives of both first and second and generation immigrant U.S. This possible because big issues like religious discrimination and racial intolerance are no longer the main concern of these writers. The noticeable thing about the Diasporic Bengalis is that the sense of nostalgia in the form Bengaliness also spreads through the writings of second-generation writers such as Jhumpa Lahiri.

Nilanjana Suresh na Jumpa Lahiri was born in London to her parents of Indian origin but not very much known about their 'compulsions' or 'ambition '. She was born on July 11, 1967, in London. The daughter of Indian immigrants from the Indian state of West Bengal. Her family moved to the United States when she was three; Lahiri considers herself an American and has said, "I wasn't born here, but I might as well have been Lahiri grew up in Kingston, Rhode Island, where her father Amar Lahiri worked as a librarian at the University of Rhode Island the protagonist in "The Third and Final Continent", the story which concludes *Interpreter of Maladies*, is modeled after him. Lahiri's mother wanted her children to grow up knowing their Bengali heritage, and her family often visited relatives in Calcutta (now kolkata).

When Lahiri began kindergarten in Kingston, Rhode Island, her teacher decided to call her by her familiar name Jhumpa because it was easier to pronounce than her more formal given names Lahiri recalled, "I always felt so embarrassed by my name.... You feel like you're causing someone pain just by being who you are her ambivalence over her identity was the inspiration for the mixed feelings of Gogol, the protagonist of her novel *The Namesake*, over his own unusual

name. In an editorial in *Newsweek*, Lahiri claims that she has "felt intense pressure to be two things, loyal to the old world and fluent in the new." Much of her experiences growing up as a child were marked by these two sides tugging away at one another. When she became an adult, she found that she was able to be part of these two dimensions without the embarrassment and struggle that she had when she was a child

Lahiri graduated from South Kingstown High School and received her B.A. in English literature from Barnard College of Columbia University in 1989. Lahiri then earned advanced degrees from Boston University: an M.A. in English, an M.F.A. in Creative Writing, an M.A. in Comparative Literature, and a Ph.D. in Renaissance Studies. Her dissertation, completed in 1997, was titled "Accursed Palace: The Italian palazzo on the Jacobean stage (1603–1625). Her principal advisers were William Carroll (English) and Hellmut Wohl (Art History). She took a fellowship at Provincetown's Fine Arts work Center, which lasted for the next two years (1997–1998). Lahiri has taught creative writing at Boston University and the Rhode Island School of Design. In 2001, Lahiri married Alberto Vourvoulias-Bush, a journalist who was then deputy editor of *Time* Latin America, and who is now senior editor of *Time* Latin America. In 2012, Lahiri moved to Rome with her husband and their two children, Octavio (born 2002) and Noor (b. 2005 On July 1, 2015, Lahiri joined the Princeton University faculty as a professor of creative writing in the Lewis Center for the Arts.

Jhumpa Lahiri received a numerous awards such as, O. Henry Award ,PEN/Hemingway Award , American Academy of Arts and Letters, Pulitzer Prize for Fiction, , Frank O'Connor International Short Story Award , Asian American Literary Award DSC Prize for South Asian Literature ,Pen/Malamud Award. Jhumpa Lahiri's is a popular short story writer, novelist and author known for her non- fiction writings as well. She has been mostly active in writing short stories. She has published two major collection of stories and these two collections includes 17 short stories in total. Her stories are predominantly about the life and struggles of Indians in the USA.

She began her career with the short story collection *Interpreter of Maladies* (1999), *Un accustomed Earth* (2008), *Hell-Heaven* (2004), *A Choice of Accommodation, Once in A Lifetime* (2006), *A Global Anthology* (2009). Initially, her stories faced rejection problem from publishers. Her debut short stories collection, *Interpreter of Maladies* was finally released in (1999). Her themes were marital difficulties, human relationship on marriages, particularly the arranged marriages under Indian society.

Her second collection of short stories, *Unaccustomed Earth* was released in Aprilia 2008. Upon its publication, *Unaccustomed Earth* achieved the rare distinction of debuting at number one on The New York Times bestseller list. In this story it's mainly focused on the second and third generations of immigrants and their assimilation in to the culture of the United States

One World: A Global Anthology of short stories is a collection of stories. It was published in 2009 by New Internationalist. This book is made up of 23 stories, each from a different author from across the globe. All belong to one world, United in their diversity and ethnicity. And together they have one aim: to involve and move the reader. The collection was put together by, Nigerian writers Ovo Adagha and Molara wood, and includes stories by notable authors, such as Chimamanda Ngozi Adichi and Jhumpa Lahiri as well as many writers. Her fiction works are, *Only Goodness: Family Snapshots* (2013), *The Clothing of Books* (2016), *In other words* (2016), *Translation myself and Other* (2022) and her Novels are: *The Namesake* (2003), *The Lowland* (2013), *Whereabouts* (2021).

The *Namesake* is Jhumpa Lahiri's first novel. The story revolves around the Ganguli's, a Bengali family who immigrated to the United States in 1960s, The Novel begins with the young couple, Ashoke and Ashima, who were the first to arrive in the lives of their children. Here the major theme portrayed in the novel is One of Identity, and its illustrated vividly by examining the important of one's culture and background, gender and destiny in life.

The *Lowland* is the second novel written by Jhumpa Lahiri. It was published in the year 2013. This work was shortlisted for the Man Booker prize and the National Book award for fiction. Lowland deals with the Diasporic Dilemma on the background of Naxalite movement took place in India. Geography is destiny in Jhumpa Lahiri's new novel, *The Lowland*. Her title refers to a marshy stretch of land between two ponds in a Calcutta neighborhood where two very close brothers grow up. In monsoon season, the marsh floods and the ponds combine; in summer, the floodwater evaporates. You don't need your decoder ring to figure out that the two ponds symbolize the two brothers — at times separate; at other times inseparable. But there's still more meaning lurking in this rich landscape. Lahiri's narrator goes on to tell us: "Certain creatures laid eggs that were able to endure the dry season. Others survived by burying themselves in mud, simulating death, waiting for the return of rain.

For most of Lahiri's novel, we're stuck in the mud with the cautious older brother whose name is Subhash. Consequently, there's a quality of stillness to *The Lowland* that, especially in its opening sections, almost verges on the stagnant — or would, were it not for. Lahiri's always surprising language and plotting. *The Lowland* is something of a departure for Lahiri, whose other work often explores the struggles of Indian immigrant families. *The Lowland*, instead, opens in Calcutta in the 1950s and '60s, and keeps returning there even as the main story moves ahead in time. *Lowland* is a novel about the rashness of youth, as well as the hesitation and regret that can make a long life not worth living. Intricately woven this story explores the repercussions of decision made by Udayan, Subasha, Gauri and Bela linking them through tragedy and love. The Second chapter deals with The Tale of Choice between Freedom and Duty in Jhumpa Lahiri's novel, In *Lowland* she exposed through the character of Gauri. when she abandoned the duty in search of her own freedom to educated herself.

This chapter formed the Introduction. The second chapter explains the tale of choice between Freedom and Duty in Jhumpa Lahiri's *The Lowland*. The chapter Third forms the conclusion.

CHAPTER -II

JHUMPA LAHIRI'S *THE LOWLAND*- THE TALE OF CHOICE BETWEEN FREEDOM AND DUTY.

Freedom is a fundamental human right and an essential component of human dignity. It's the prerequisite for being able to do what you want, be who you want, choose what you want, and think what you want. Freedom is a precious commodity that many people have fought for over the years. Its shouldn't be taken for granted, because there are still people in this world who' re not free. When a human being groups up, he gets more and more personal responsibility in his life. At the same time, with this responsibility, one also gains freedom.

According to cicero, duties come from sources. Duty is a result of human beings, One's particular place, One's character and One's own moral expectations. His philosophy of duty has been depicted in his famous work "On Duty". Duty is something that one is expected or required to do by moral or legal obligation. Duty is a term that is used in many different ways. It can be used to describe the moral obligation we have to do our jobs, the moral obligation we have as citizens to uphold the law and protect our self. "Duty can be seen as something unpleasant or unwanted," Duty is usually imposed on someone by another entity- it is something one must do. It is not necessarily something you want to do, but you are obligated to do it anyway because of your role in society or your position in an organization.

Thus, the Duty and freedom are important for our life .In our life we should maintain both Freedom and Duty in a parallel way .Then only we can lead our life in fulfill manner . If the person neglected their Duty and focuses on the freedom, some off their priceless gifts were demolished in their life.

In Lowland Jhumpa Lahiri says about duty and Freedom. It's a novel that narrates the story of two brothers. The younger one is a Naxalite who is killed in a marshy land near Calcutta in a police encounter. His pregnant wife Gauri accompanies the elder brother of her deceased husband to the USA and marries him. In the USA, Gauri is trapped in a permissive life style abandoning her duties as a mother and husband. She is completely disconnected from her family while subhash looks after her daughter Bela like a true father. At last, Bela comes to know that subhash is not her real father but contrary to subhash's fear, she is united in love with her Godfather. The novel questions Gaur's indifference to familiar duties in favor of Independence Lahiri ultimately suggests that people may use the excuse of familial duty for their own ends, and thus creates a complex and nuanced set of characters whose dueling impulses often land them in difficult situations.

This novel open in the, East of the Tolly Club in Tollygunge, a neighborhood in the West Bengal city of Calcutta, there is a small mosque, and past that modest, middle-class homes. Once, within the enclave, there had been two ponds, and between the ponds a Lowland which took up a few acres. After the monsoons each year, the ponds would rise and rainwater would cover the lowland for months. The sun would eventually burn the water off, and once again the damp, marshy ground would become exposed quiet enclave of.

Two brothers, Subhash and Udayan, have walked across the lowland uncountable times, using it as a shortcut to the field where they play football, or soccer, with friends. As they tiptoe through the dank, wet lowland, they encounter many kinds of plant and animal life. Some creatures lay eggs that are able to last through the dry season, while others bury themselves in the mud, "simulating death" and waiting for the rains to return. Subhash and Udayan have never set foot in the Tolly Club, a local golf and country club, though they have passed by its high brick walls "hundreds of times." Their father used to watch horse races within from the street as a young man, but after the Second World War—around the time when Subhash and Udayan were born—the walls of the Tolly Club were raised to keep the public from being able to see inside.

Bismillah, one of the boy's neighbors, works as a caddy at the club. Bismillah is a Muslim who stayed in Tollygunge following partition —the violent and devastating 1947 division of British India into two independent nations, India and Pakistan. Bismillah sells local boys golf balls and broken putting irons which have been lost or damaged on the golf course for a cheap price, allowing subhash, Udhayan, and other boys like them who are barred from the Club to play golf on their own—despite the fact that they're not very good at it. Bismillah knows the boys long to learn more about the club, and he draws them maps of the interior and gives them a tip about "sections of [unfinished] wire fencing where one might enter." One evening, Subhash and Udhayan decide to try to infiltrate the club.

Around dusk, they approach the wall with their putting iron and two empty kerosene tins. They cut through dried-up paddy fields, passing refugee encampments filled with Hindus who have fled from the territories which are now a part of Pakistan. These families have been "stripped of their ancestral land," and now are forced to live without sanitation or electricity, "in shanties next to garbage heaps, in any available space." These people, Subhash and Udayan know, are "the reason for the club's additional walls.

"Subhash gripped the wall with his hands, hugging it to his chest, scraping his knees. As Usual he was uncertain whether he was more frustrated by Udayan's daring, or with Himself for his lack of it. Subhash was thirteen, older by fifteen months. But he had no Sense of himself without Udayan. From his earliest memories, at every point, his brother Was there. (TLL,P.9)"

Both were arrived at the walls of the Club and find a place where the fence is low enough to scale. Their pockets are full of golf balls, and Bismillah has told them that they will find plenty more inside. Subhash helps his brother—who is a few inches shorter—to climb over. Subhash offers to stand guard on the outside of the wall while Udayan explores, but Udayan urges his brother to join him on the other side. Subhash reluctantly heaves himself over the wall, as "frustrated by Udayan's daring [as he is by] himself for his lack of it." He is thirteen, and older

than Udayan by over a year, but has "no sense of himself" without his younger brother. The boys are suddenly "no longer in Tollygunge." The Club is full of lush tree, manicured grass, and beautiful tall egrets. The boys are afraid they will be caught, but when no one comes to chase them away, they begin to relax and explore the golf course. As the boys practice their swings, they encounter a water buffalo and a group of jackals, who begin howling—signaling that it is late, and time for the boys to go home.

"On subsequent Visits Subhash collected feathers and wild almonds. He saw Vultures bathing in puddles, spreading their wings to dry.

Then one evening, throwing over the putting iron from inside the club, climbing back over the wall, they noticed that the kerosene tin on the other side was missing. (TLL,P.11)"

The boys return many times, and on each visit Subhash collects feathers, almonds, and bird eggs while Udayan practices his swing. One evening, climbing over the wall to leave the club, the boys notice that the kerosene tin they've left on the outside of the wall is missing. Just then, a policeman appears, and makes them empty their pockets, which are full of golf balls. He also takes their putting iron. The policeman tells the boys that they should know better. Udayan insists the break-in was his idea, and the policeman tells Subhash he has a "loyal brother." The policeman tells the boys that he'll do them a favor and forgo mentioning their trespassing to the Club as long as they promise not to try it again.

Subhash agrees. The policeman orders Subhash to turn around and face the wall, and then strikes the backs of his legs with the putting iron. Udayan cries for the policeman to stop, throwing himself in front of Subhash. The policeman throws the iron into the grass andSince childhood, Subhash has been a cautious, quiet boy. He enjoys planting dahlias, observing insects, and helping his mother, Bijoli, cook. His relatives believe "he lives in his own world," and yet he is always in plain sight; Udayan, on the other hand, is always disappearing, playing games in which he hides and then jumps out to surprise his family members.

As the boys have grown older, Udayan has shown himself to be brave and "blind to self-constraints," approaching Bengali cinema stars on visits to Technicians' Studio, the local film lot, while Subhash is always trying to "minimize his existence."

"And so the imperfection became a mark of distinction about their home. Something visitors noticed, the first family anecdote that was told. (TLL,P.15)"

Despite their differences, the boys look and sound so alike that they are perpetually confused for one another; they even answer to each other's names. Subhash is insecure about his quiet, passive disposition; his brother, despite his unruly nature, is always able to "surprise [and] impress" their parents, family members, and even strangers. For example, when the family's courtyard had been paved and the boys had been told to stay off the fresh cement for twenty-four hours, Udayan had broken the rules and run through the wet pavement, leaving his footprints behind. Rather than grow angry with him, their parents chose to leave the prints there. Udayan's "imperfection became a mark of distinction about their home," and the first thing that all visitors notice

"Once the buzzer was installed, Udayan said they should use it to practice Morse code. Finding a book about telegraphy at a library, he wrote out two copies of the dots and Dashes that corresponded to the letters of the alphabet, one for each of them to consult. (TLL,P.17)"

In their classes, Subhash and Udayan learn that Tollygunge was built on reclaimed land. It was once a dense swamp, which the English—led by Major William Tolly—cleared and began to inhabit in the 1770s. A "displaced dynasty" of Muslim rule has soaked into the bones of the town, and though partition has made Muslims a minority in Calcutta, the streets of Tollygunge retain Islamic names. Udayan becomes obsessed with circuitry and electronics, and installs a buzzer at the front door of the house.

He and Subhash learn Morse code, and take turns sending each other messages through the buzzer. They pretend to be "soldiers or spies" and play games centering around covert communication. The boys grow older and are admitted to two of the city's best, Udayan to Presidency to study physics, and Subhash to Jadavpur to study chemical engineering. They are the only students from their high school to have achieved such honors, and the first members of their family to pursue degrees. Their proud parents allow them to choose a gift to celebrate. Subhash wants a marble chess set, but Udayan wants a shortwave radio—and Udayan gets his way.

"In 1967, in the papers and on All India Radio, they started hearing about Naxalbari. It Was a place they'd never heard of before. It was one of a string of villages in the Darjeeling District, a narrow corridor at the Northern tip of West Bengal. Tucked into the foothills of the Himalayas, nearly four Hundred miles from Calcutta, closer to Tibet than to Tollygunge. (TLL,P.20)"

The boys use the radio to listen to news from around the world. It is 1964, and the reports they hear tell of the war in Vietnam and conflicts in Brazil. Distressing, too, are the reports from Calcutta itself: riots between Muslims and Hindus claim hundreds of lives, and Indian communists form a breakaway political group sympathetic to China: Communist Party of India, Marxist, or the CPI(M). In 1967, the boys begin hearing about Naxalbari on the radio and in the newspaper. One of a string of villages in the Darjeeling District, nearly four hundred miles from Calcutta, it is a place inhabited mostly by tribal peasants who have for generations been living under a feudal system: being manipulated by wealthy landowners, preyed upon by moneylenders, evicted from their land, and denied profits from crops they've grown.

In March of 1967, a sharecropper in Naxalbari ploughs land from which he has been illegally evited, and his landlord sends "thugs" to beat him. The police hear of the incident, but refuse to intervene, and as a result sharecroppers across the region begin retaliating, burning deeds and records and forcibly occupying land. Though, this is not the first instance of peasant revolts in

the district, the peasants have now adopted militant tactics. They are armed with primitive weapons, carry red flags, and can be heard shouting "Long live Mao Tse- tong Two Bengali communists, Charu Majumdar and Kanu Sanyal, are the movement's primary organizers These men, younger than most of the communist leadership in India, are dissidents of the CPI(M) and see the older generations as out of touch. Sanyal is a true radical—raised wealthy in an upper-echelon Caste, Sanyal now refuses to own property and devotes his life to the rural poor. The Calcutta government has attempted to enlist Sanyal's help in getting the peasants to surrender, but he backed out of negotiations at the last minute. As tensions have escalated, many peasants have been killed

"In May it was reported that a group of peasants, male and female, attacked a police inspector with bows and arrows, killing him. The next day the local police force encountered a rioting crowd on the road. An arrow struck one of the sergeants in the arm, and the crowd was told to disband. When it didn't, the police fired. Eleven people were killed. Eight of them were women. (TLL,P.21)"

Subhash and Udayan often stay up late, listening to the radio and discussing what is happening in Naxalbari. Udayan supports the peasant rebellion, but Subhash has reservations, feeling that the peasants' primitive weapons will do no good against the might of the state. Udayan, though, admires the peasants for fighting back through any means possible. Udayan blames the United Front, the left-wing government coalition in charge of West Bengal, for not backing the rebellion despite its promises of rights for workers and peasants and its communist sympathies Over the summer, the conflict worsens, and there are demonstrations in support of the Naxalbari peasants at both subhash and Udayan 's colleges.

The West Bengal government authorizes a raid of Naxalbari peasants' houses, and many insurgents are captured as a result. The rebellion is quashed, and when news of its defeat reaches Udayan and Subhash via their radio, Udayan is visibly upset. He quotes a Chinese newspaper which recently predicted that the "spark in Darjeeling will start a prairie fire and will certainly set

the vast expanses of India ablaze." Subhash begins finding communist texts, including Mao's Little Red Book, among Udayan's things. One afternoon, on a study break, Subhash picks up a book of essays by Majumdar, and later asks Udayan whether he really believes Majumdar's calls for India's communists to follow China's example—and use civil war as a tactic of seizing power—can really work.

Udayan tells Subhash these methods have already worked in China. Subhash and Udayan are on their way to play soccer, and as they pass the Tolly Club, Udayan calls it an "affront." Subhash remembers breaking in as a boy, and attempts to remind Udayan of these memories, but Udayan replies only that "golf [is] the pastime of the comprador bourgeoisie" and points out that after the Cuban revolution, "getting rid of the golf courses was one of the first things Castro had done." Udayan begs Subhash not to leave India, but Subhash feels the distance between himself and his brother is already too wide to bridge. Whenever Udayan is at Gauri's house, studying and discussing communism with her brother Manash, Gauri stays on the balcony or in another room. One day, however, the houseboy is out on an errand, and Manash asks Gauri to make the two of them tea. Gauri brings the men their cups, and when she locks eyes with Udayan, the attraction between them is instantaneous—they both feel Gauri and Udayan's universities are next to one another, and Gauri often finds herself looking for him.

Even at home, on the wide balcony that wraps around the two sides of her grandparents' apartment, Gauri scans the people on the streets below for Udayan's face. One day, Udayan joins Gauri on the balcony; Manash is out running errands. Gauri and Udayan begin talking, and Gauri tells Udayan that she has "observed the world" from this balcony for most of her life. She reads on the balcony, and even sleeps out there some nights.

In America, Subhash attends university in Rhode Island, at which he is one of the only Indian Udayan notices that Gauri is reading Descartes and asks her about her studies in philosophy. Gauri enjoys says they help her understand the world, but Udayan believes that degrees have become meaningless in India. When Gauri points out that Udayan himself is enrolled

in a degree program, he quickly changes the subject, and asks about Gauri's family. She lives with Manash, their maternal grandparents, two uncles and their wives. Gauri explains that she moved around a lot as a child—her father was a district judge—but she came to live with her grandparents after her parents died in a car accident. Udayan agrees, flirtatiously, that Gauri should never stop doing what she loves "for the sake of a man." Udayan points to a home across the street and asks Gauri whether it would be "all right" to get married if the man lived just on the opposite corner.

Gauri smiles coyly and laugh Udayan's letters no longer mention Naxalbari or any kind of politics. He asks repeatedly, though, when Subhash is going to return to Calcutta and marry. Subhash is puzzled by the blandness of these letters in contrast with Udayan's earlier, fiery missives. Letters from Subhash's parents express their disappointment with Udayan's rash elopement, and urge Subhash to trust them, when the time comes, to choose his wife for him. Subhash replies encouragingly, assuring them that his future is in their hands. Subhash knows that though Udayan has provoked their parents, he still lives under their protection with his wife Gauri—Subhash wonders if the girl has already replaced him.

His feelings of isolation increase when a letter from Udayan arrives saying he has gone against their parents' wishes for an arranged marriage and chosen to marry a woman named Gauri for love. Subhash learns that Holly and Jousha live nearby. Though Holly does not mention her husband, Joshua talks about his father a lot. Subhash sees Holly and Joshua at the beach often, and the three of them—along with the dog, Chester—frequently take walks together. One afternoon, while they share a picnic on the beach. Holly confesses that she and Joshua's father have been living apart for nearly a year—he is with another woman. As the weeks go by, Subhash finds himself nursing an attraction to Holly. He knows that there are "great chasms" separating them: cultural differences, an age gap of nearly ten years, and the fact that Holly has experienced love and heartbreak—things Subhash has never known.

Subhash wishes he could tell Udayan about the "profound step [he has] taken" in embarking upon an affair with Holly, but knows that to accurately describe Holly—and the arrangement between them—in a letter or a telegram would be impossible. One weekend in September, Joshua is visiting his father, and Holly suggests she and Subhash take a ferry to Block Island for the weekend. There, Holly gifts Subhash a pair of binoculars. The two go bicycling, and Subhash is reminded of learning to ride a bike with Udayan in Calcutta. He thinks of a letter he recently received from his brother, which tells of how mundane Udayan's life has become—but still makes oblique reference to a fascination with Castro. The letter caused Subhash to wonder whether his brother has "traded one passion for another," and committed fully to a quiet life with Gauri. Subhash, who had been proud of himself for taking a bold new step in moving to America, feels "defeated by Udayan all over again."

Throughout his second year of graduate school, Subhash fields frequent letters from Udayan asking when Subhash is going to come home and allow their parents to arrange a marriage for him. The letters almost never mention Naxalbari or any radical politics at all, and Subhash is relieved that his brother has settled down. Subhash becomes involved with a young, married white woman named Holly; though he knows the relationship is not tenable in the long-term, he is heartbroken when Holly ends their affair. At the end of summer, a letter arrives from Calcutta, telling Subhash that Udayan has been killed and urging him to come home as soon as he can. As he enters his home's courtyard, he looks down at Udayan's footprints in the cement.

"His parents did not stand or say his name. They did not come downstairs to greet him. Instead his father lowered a key on a string through the ironwork. Subhash waited to retrieve it, and opened a heavy padlock at the side of the house. Finally he heard his father cleaning his throat, seeming to loosen the secretions of a long silence. (TLL,P.71)"

Subhash's parents toss down a key rather than coming to greet him, and Subhash uses it to open a heavy padlock on the door. Subhash joins his parents for lunch. When he asks where Gauri is, his parents tell him that she prefers to take meals in the kitchen. Subhash knows, though, that they are indulging a custom of segregating the widow from the rest of the family. Subhash asks to meet Gauri, but his parents tell him she's not feeling well.

"Is she there now? I would like to meet her. She's resting. she's not feeling well today. Have you called a doctor? His mother looked down, preoccupied with the food she was serving to the others. There's no need for that. Is it serious? Finally she explained herself. She is expecting a child, she said (TLL,P.73)"

When he asks if they've called a doctor, they reveal the truth: Gauri is pregnancy Sensing how bad things are for Gauri in his parents' house, he offers to take her somewhere else—to visit her family, perhaps—but she tells him that her family is still angry with her for eloping. Subhash then asks Gauri to tell him what happened to Udayan. The police ask Gauri where he is—they know he somewhere in the enclave, and they have cordoned it off. Gauri says she does not know, but the officers accuse her of lying and hold a gun to her throat.

Gauri knows that Udayan is hiding in the lowland—he has rehearsed his escape from the house many times before. The soldier with the megaphone announces that he will begin shooting members of the Mitra family if Udayan does not reveal himself. The office again says that if you won't come we are prepared to eliminate the members of your family if you don't do we say. Moments later, Gauri can hear something emerging from the flooded lowland, she heard the sound of the water's surface breaking. Udayan appeared between the hyacinth, the water up to his wait. He was shivering, struggling to regulate his breathing. The office arrests him. He lifts his hands above his head, following the officers' orders, and is marched over to his family.

"He was told to bend down and touch his parents' feet. He was told to ask for their forgiveness. He had to do this with his left hand. He stood before his mother and bent down. Forgive me, he said.(TLL,P.82)"

The soldiers instruct him to bend down and touch his parents' feet, asking for their forgiveness. Udayan's Right hand is bandaged from a previous injury, and so he does this all with his left hand. Udayan's father asks the policemen what he is supposed to be forgiving. The policemen tell him that Udayan has "betrayed his country." After Udayan begs his parents' forgiveness, he meets Gauri's eyes for just a second, and then is pulled away into the van. Gauri, Bijoil, and Udayan's father are escorted back into the house, and as they go, they hear the van starting up, and then see it driving over the grass at the edge of the Lowland toward the empty field on the other side. Gauri and her in-laws climb to the third-floor terrace and watch as the soldiers release Udayan from the van. They see him walking away from the paramilitary officers and back toward the house.

"In the diary there was also a map Udayan had sketched of the layout of the Tolly Club. The locations and names of the building, the stables, the caretaker's cottage. The arrangement of the driveway, the configuration of the walking paths.(TLL,P.84)"

Gauri thinks for a moment that they are letting him go, but then there is the sound of gunshots—Udayan has been executed. The officers drag his body back towards the van, lift him into the back, start the engine, and drive away The police, Gauri's learns, had discovered a diary under her and Udayan's mattress when they entered the house to search for him. It contained instructions for how to create homemade bombs and Molotov cocktails, and featured a map Udayan had sketched of the Tolly Club's layout. Over a month earlier, when Udayan was questioned by the police—a routine occurrence, lately, for the young men of Calcutta—he denied having any ties to the CPI(ML) Then, about a month before he was killed, Udayan did not come home one night.

When he returned the next morning, his right hand was bandaged—he and his group had been assembling a pipe bomb, and Udayan, due to his tremor, accidentally set it off in his own hands, blowing off his fingers. Udayan told his parents that it had happened during an experiment at school. That a bit of sodium hydroxide had spilled on his skin. He told them not to worry the hand would heal in a few weeks. But he reveal the truth only to Gauri For two weeks Udayan was gone. she did not know that where he was, whether he is safe or not. But someone may noticed that he retrieved at the stationer's on the main road. At the end of the two weeks he did not have no other place to shelter him so he returned to their enclave.

"Once he was home again he was unable to leave. His parents, anxious for his return, preferred him there than anywhere else. They made sure no one saw him.(TLL,P.85)"

His parents feel panic for his return and they made sure that no one saw him. They got rid of his things, as if he were already dead and his books, clothes were hidden in a trunk under the bed. He never shows his face from a terrace or a window and never speaking above a whisper. Nearly a week passed, the police perhaps they'd lost the track of him .And he convinced Gauri and his mother to leave the house for a day to do what they had put off and to do some holiday shopping. Udayan's body is not returned to the Mitras, and they are not told where it has been burned.

"For ten days after his death there were rules to follow. She did not wash her clothes or wear slippers or comb her hair. she slept on the bed, on the pillow Udayan had used and that continued to smell for a few days of him, until it was replaced by her own odor, her greasy skin and hair. (TLL,P.85)"

After the death of her husband the family put some rules to be follow. she did not wash her cloth, and wear slippers and comb etc.. As Gauri endures the ritual mourning period, she feels isolated and numb, unable to cry or grieve Udayan. Outside, the city is celebrating; inside the Mitra

house, the family is mournful and secluded. As the festival ends, the people of Calcutta bid farewell to the goddess Durga, chanting prayers for her return the next year. About a month after Udayan's death, Gauri begins feeling faint and ill. Bijoli, realizing what is going on, informs Gauri that she is going to be a mother. Gauri reflects on how Udayan had wanted to wait until after the revolution had successfully played out to have children and considers how burdensome and difficult her future as a single mother will be. As time slowly passes, Gauri feels as if she is holding her breath, like Udayan did in the lowland.

"It's demeaning. Udayan would never have wanted her to live this way. He was not used to quarrelling with his mother. But a new energy flowed through him and he could not restrain himself. Does it mean nothing, that she's going to give you a grandchild? It means everything. It's the only thing he's left us, his mother said. (TLL,P.90)"

When Subhash returns home, he confronts his parents about their treatment of Gauri, shaming them for forcing her to dress in dull colors, abstain from eating fish and meat, and dine separately from them. Bijoli insists these are their family's customs, but Subhash tells them that they are demeaning Gauri, who is carrying their grandchild. Subhash's mother, though, believes that Gauri is "too aloof to be a mother," and suggests that once the child is born, Gauri should leave the child to them and go off to continue her studies.

Subhash begs his parents to accept Gauri and treat her with respect, for Udayan's sake, but his mother angrily warns him not to tell her how to mourn her own child. That night, Subhash cannot sleep.

"But Gauri was different. Around her, he felt a shared awareness of the person they'd Both loved. He thought of her remaining with his parents, living by their rules. His

mother's Coldness toward Gauri was insulting, but his father's passivity was just as cruel.(TLL,P.91)"

He thinks about how Udayan's death was in vain—dedicated to a movement that has caused only destruction, and which has already effectively been dismantled. He also laments that Udayan inserted Gauri into the family, only to "strand her there." As Subhash considers Gauri's predicament, he realizes that the answer is right in front of them: he cannot console Bijoli and his father, and he wants to leave Calcutta. He is afraid to leave Gauri behind, when he knows his parents' cruel treatment of her is intended to drive her out. He realizes that he must take Gauri away—and to do so, he must marry her. To follow Udayan in this way, Subhash thinks, feels both "perverse [and] ordained." Subhash is sick of being alone in Rhode Island—and, he admits, is attracted to Gauri.

"The investigator put the snapshots back into the envelope, mindful not to smudge them. Did he ever mention someone named Nirmal Dey? No. You are certain? Yes. Gopal Sinha? Subhash swallowed, and glanced at her. She was lying. Even he remember Sinha, the Medical student, from the meeting he'd attended. Surely Udayan had mention him to Gauri. (TLL,P.93)"

The next morning, rather than going to his parents, Subhash goes to Gauri directly. He gives her the shawl and helps her to wrap it around her shoulders. He tells her that he hates how Bijoli and his father treat her but cannot say any more—he loses his nerve, realizing the absurdity of his plan. Subhash knows that Gauri is mourning his brother—he himself means nothing to her. The next afternoon, two policemen and an investigator arrive at the house and ask to speak to Gauri. They ask her if she is sympathetic to Udayan's beliefs, and whether she is a current member of any political organization. She says she is not. They show her some photographs and ask if she recognizes anyone in them; she tells them she doesn't. They mention a few names to her and ask if she recognizes any of them: among them are Nirmal Dey and Gopal Sinha. Gauri denies knowing the names, but Subhash realizes she is lying—even he remembers Sinha from the

meeting he attended long ago. After, the investigators leave, Subhash joins Gauri on the terrace. He asks her when the policemen will come back; Gauri says they won't, as she has nothing to tell them, but Subhash does not believe her.

"In the end he didn't want a family. He told me the day before he died. And yet_ She stopped herself. What ? He Once told me, because he got married before you, that he wanted you to be the first to have a child.**(TLL,P.93)**"

He tells Gauri that she is not safe in Calcutta—even if the policemen leave her alone, Bijoli and his father will not. He tells her what he knows of his parents' wishes that Gauri will leave the child to them. Subhash then tells Gauri that no one in America knows about the Naxalite movement; no The next morning, Gauri tells Subhash that he does not have to shoulder the burden of marrying her—Udayan would not have wanted this Subhash says he understands, but Gauri reveals that Udayan did not want a family. In fact, she says, Udayan often said that because he had married before Subhash, he wanted for Subhash to be the first to have a child one there will bother her. Subhash tells her that he knows she still loves Udayan and does not expect love from her. He urges her understand, though, that if she joins him in America, they will be far from both political and personal harm

Gauri, now five months pregnant, arrives at the airport in Boston to find Subhash waiting for her. She is struck by how similar he looks to Udayan, but thinks he is a "milder version" of her husband with "weakness" in his eyes. Subhash brings Gauri to his car, and the two begin the drive towards Rhode Island. Gauri is disoriented and nauseated by the continuous movement of the car, different from the stop-and-start travel she is used to in Calcutta. Throughout the car ride, the baby kicks, and Gauri cannot shake the feeling that she "contain a ghost." As the couple arrives in Providence, Gauri considers the meaning of the word "foresight," or the ability to hold the future before it has been experienced.

Gauri and Subhash arrive at Subhash's apartment building. Gauri is shocked by the loose security—the flimsy locks on the apartment doors, and the fact that the main doors are held wide open by rocks. Inside, Subhash shows Gauri to the bedroom, which he tells her will be hers alone—he will sleep on the sofa bed in the living room.

During their first few days living together, Gauri is surprised by but grateful for the independent nature of their days. Subhash prepares breakfast each morning, then goes off to work, leaving Gauri with a few dollars, keys to the door and the mailbox, and the phone number of his department. Gauri reflects on the days leading up to her marriage to Subsha. Her in-laws had accused her of "disgracing their family." Gauri herself knew that the marriage was a bad choice—she was marrying Subhash as a means of staying connected to Udayan, but knew even as she was going through with it that it was as useless an act as saving one earring when the other half of the pair is lost.

Gauri at last begins exploring campus a little more. One day, she enters a lecture hall in the philosophy department and sits down. She peers at another student's syllabus and sees that the course is an undergraduate one in ancient Western philosophy. Gauri goes back twice a week, every week, to take the class, intending to sit in the back and remain anonymous—but after a while, she cannot help herself, and begins vocally participating in the class. Gauri begins spending more and more time on campus, enjoying the feeling of being surrounded by people. She longs to blend in—she is still wearing saris every day but wants to begin looking like the other women on campus. Subash and Gauri attend an appointment with a local obstetrician, who tells Gauri that the baby is healthy and developing well. After the appointment, Subhash stops at the supermarket, and Gauri waits in the car.

Exploring his glove box, she finds a woman's hair elastic, and feels relieved that she is not the only woman in Subhash's life—that she, too, is a replacement. Gauri and Subhash take a walk on the beach one day and discuss baby names. Subhash asks if being in America is helpful to Gauri, and she admits that it is indeed helpful to be away from Calcutta.

"I'll make it mine, Gauri. I've promised you that. She was unable to express her gratitude for what he'd undertaken. She was unable to convey the ways he was a better person than Udayan. She was unable to tell him that he was protecting her, for reasons that would cause him to regard her differently. (TLL, P.106)"

She is overwhelmed, though, by the burden she has placed on Subhash. Subhash reminds Gauri that he promised to raise the child with her. Gauri wishes she could express the magnitude of her gratitude to Subhash, or tell him that he is a better man than Udayan, but she cannot. She looks at their footprints in the sand and sees that, unlike Udayan's footprints in the courtyard, they are already washing away After the birth of "their" daughter, Bela , Gauri's feelings of isolation and displacement do not abate. She and Subhash embark on a sexual relationship, but even this release of tension does not allow Gauri to feel any peace.

Gauri takes a philosophy class and does so well in it that her teacher recommends she eventually pursue a doctorate. As Gauri becomes more dedicated to her studies, her relationship with the young Bela grows more and more contentious. When she is at last admitted to a doctoral program in Boston, when Bela is in first grade, Subhash becomes resentful of Gauri's desire to escape their home, their marriage, and now their child. Subhash's father dies, and he takes Bela—now twelve—on a six-week trip to Calcutta. Bela has trouble feeling comfortable in the house—she cannot sleep in the heat under the mosquito netting; at meals, she struggles to eat with her hands, as is the custom, and must be given a spoon.

She cannot drink the water everyone else drinks and must have hers boiled to avoid getting sick. "She's not made to survive here," her Bijoli concludes one morning. After the first week in Calcutta, during which there is a mourning service for Subhash's father, Subhash begins giving lectures at nearby universities and meeting with scientists. Bela spends her days waiting nervously for him to return. One day, Bela accompanies Deepa shopping, excited for the outing—but after many people on the street stop Deepa to ask about Bela, and then ask Bela questions about herself, she feels drained and scrutinized, and longs to return to the house

There is no dining table in the house, and Bela eats on the floor in the room where Bijoli sleeps. As she eats her meals, she looks at the pictures on the wall—the one of her dead grandfather, and the one of the teenaged boy whom her grandmother has told her is her father

"she watched her grandmother studying the picture as if each one showed the same thing. Where is Gauri? She doesn't like to pose for the camera, her father said. She's been busy, teaching her first class. And she's finishing her dissertation. She's about to hand it in.(TLL,P.151)

Bela believes she is looking at a picture of Subhash as a young boy. Bela and Subhash show Bijoli pictures of their lives in Rhode Island. When Bijoli asks why Gauri is not in any of the photos, Subhash answers that Gauri doesn't like to pose for the camera; plus, he says, she has been busy teaching and finishing up her dissertation. Bela thinks of how her mother is often so busy, locked in her study, that the two of them go long stretches of the day without seeing or speaking to one another. Bela spends a lot of time in the apartment with Gauri, but it is mostly silent time, sometimes filled with errands related to Gauri's schoolwork.

Bela knows that her parents sleep in separate bedrooms and has wondered why. One evening, Bela asks Subhash how old he was in the picture in Bijoli's room. Subhash explains that the picture is not of him—it is of Udayan, who died years ago of an "illness." When Bela tells Subhash that Bijoli often says the picture is of "her father," Subhash tells Bela that Bijoli is simply old and confused.

Subhash's mother Bijoli, her mind addled by old age, spends her days caring for a cement post in the lowland that marks the spot where Udayan died.Bela and Subhash spend Bela's twelfth birthday at the Tolly Club—one of Subhash's old college friends is a member and invites them as his guests. Bela swims in the pool, talks with children her age, takes a pony ride, and eats delicious food. Bela notices her father watching golfers all afternoon, and at one point, he brings her to

another area of the club where there are fewer people, and packs of jackals resting in the shade. Subhash explains that he and his brother used to sneak into the club and play in this area—when Bela asks why they had to sneak in, Subhash explains that things were different back then. Soon after Bela and Subhash leave the club, Bela is overcome by longing for her mother.

She begs to call her, but the phone line at the house is down. Bela asks if they can return to the Tolly Club another day, but Subhash says he wants to spend their last few days in India resting for the long journey back. After the trip, Bela and Subhash return to Providence to find that Gauri has left. She has written Subhash a note in Bengali, informing him that she has taken a teaching job in California and is leaving Bela to Subhash.

"In this shadow she saw the impression of her mother's forehead, the slope of her nose. Her mouth and chin. Its source was unknown. Some section of branch, some overhang of the roof that refracted the light, she could not be sure.(TLL,P.163)"

In the weeks after Gauri's disappearance, Bela notices that a shadow in the corner of the room resembles her mother's profile. In the shadow, Bela can see the shape of her mother's forehead, nose, and chin. She cannot tell whether a branch outside or an overhang of the roof creates the shadow. Bela is both upset and comforted by its consistency: it returns each morning to the place from which her mother has fled. As Subhash and Bela begin adjusting to life without Gauri, Bela becomes withdrawn and loses weight.

When a guidance counselor calls to report that Bela is distracted in school, Subhash begins taking her to see a therapist. As the months go by, and Bela enters eighth grade, she begins making friends and participating in school activities. The summer Bela graduates from high school, Subhash receives a letter telling him that his mother has had a stroke—he returns to India without Bela, and Bijoli dies.

After Subhash returns to Rhode Island, he brings Bela to college in the Midwest. As the years go by, she follows in Subhash's footsteps by studying environmental sciences. After graduation, however, Bela takes up an itinerant existence, travelling across the country and working on different farms. She returns home only a couple of times a year to visit. Every time Subhash sees Bela, he is surprised by how politically-minded and, in some ways, radical she has become, and worries that Udayan has reclaimed Bela from beyond the grave. Meanwhile, on the West Coast, Gauri lives an isolated but successful life.

She has published three books and has a tenured teaching job at a university in Southern California. She regrets having betrayed Bela but is too grateful for her freedom to dwell much on what she has done to her family. Subhash, now a man of sixty, lives a similarly isolated existence. At the funeral of a friend from graduate school, he meets a woman named Elise Silva —a widow and former high school teacher of Bela's who now runs the local historical society. She and Subhash begin seeing each other. Bela is in her early thirties, and living in Brooklyn with a cooperative of artists, nomads, and radicals. She knows that her itinerant life is due to the influence of Gauri's abandonment, but shows no signs of wanting to live any other way.

"She wanted to come home again. She wanted to stay with him, to give birth in Rhode Island. She wanted to provide the same home for her child that he had provided for her. She wanted not to have to work for a while. Would that be all right with you The coincidence coursed through him, numbing, bewildering. A pregnant woman, a Fatherless child. Arriving in Rhode Island, needing him. It was a reenactment of Bela's Origins. A version of what had brought Gauri to him, years ago. **(TLL,P.200)"**

One June, Bela returns to Rhode Island for a visit, and reveals that she is pregnant. She has no relationship with the child's father, and instead wants to raise it on her own in Rhode Island, in the house she grew up in. Subhash is moved to tell Bela, at last, the truth of her parentage. Bela reacts poorly, at first, but after a trip to the coast to stay with a friend, she returns home and tells Subhash that knowing the truth does not change the fact that Subhash is her only father. If anything,

she says, she loves him more, knowing now all he has done for her. Back in California, Gauri reluctantly agrees to be interviewed by a former student for a book he is writing on the Naxalite movement.

"She had already signed the divorce papers, granted her consent. She would hand him The documents in person. She would tell him she happened to be passing through. (TLL,P.230)"

The interview brings up painful memories, and the lingering fear that she will be implicated for her tangential involvement, through Udayan, in the movement. One day, Gauri receives a letter from Subhash, asking her to sign some papers finalizing a divorce between them. Rattled, Gauri retreats into her memories of the early 1970s. Back then, she helped Udayan deliver letters on behalf of the CPI(ML) and was instrumental in the killing of a prominent policeman. Gauri tracked the man's schedule and reported back to Udayan the times when he was off-duty and unarmed so that Udayan's group could murder him. To this day, Gauri is haunted by the things she did. A few weeks after receiving Subhash's letter, unable to compose a sufficient written response, she decides to stop in Providence on the way to a conference in London, to hand Subhash the papers in person and apologize for her actions.

"They were simply question, ones that Bela did not mind answering when posed by strangers. But coming from her mother each felt outrageous. Each was an affront. She was unwilling to share with her mother, so casually, the facts and choices of her life. She refused to utter the words. (TLL,P.233)"

When Gauri rings the doorbell of her old house, however, it is Bela who answers. Subhash is not home, and so Gauri sits with Bela and her four-year-old daughter, Meghna, attempting to make small-talk and find out the details of their lives. Bela is enraged by her mother's presence and refuses to answer any of her questions. She berates Gauri for leaving, telling her that she is

"nothing." Gauri leaves and flies to Calcutta instead of London, determined to confront her past. She visits the lowland, which has been filled in and built up—condominiums now stand on the site of Udayan's execution. Gauri considers committing suicide by throwing herself off the balcony of her room in a local guesthouse, but ultimately loses her will to die, and returns to California.

Subhash and Elise, now married, go on a honeymoon to Ireland. Visiting a circle of stones in the countryside, and seeing the flooding all around them, Subhash is reminded of the lowland. The narrative flashes back to the evening of Udayan's death, revisiting his last moments from his own perspective. Udayan struggles to hide from the police underwater in the flooded lowland but cannot hold his breath long enough. He worries, in his final moments underwater, that his dedication to the revolution has helped no one, and instead had sown only violence and discord.

As the police march Udayan across the field beyond the lowland, he knows he will die. He recalls meeting Gauri for a date one afternoon in front of a movie theater, and as the police's bullets rip through him, his last thoughts are of the sunlight on her hair. In a masterful twist, Lahiri provides us, near the end of the novel, and long after he has been executed, Udayan's perspective as he hides under the hyacinth leaves in the flooded lowland, moments before his death. He is frightened and ashamed of the dangerous situation in which he has left his family. The lowland follows the mitra family through four decades and as many generations, with the fraught relationship between brothers Subhash and Udayan forming the novel's core. Subhash and udayan repeatedly question what they owe one another, and, in turn, what they are owe. As they, along with Gauri and Bela, wrestle with their duties to one another, Lahiri explores the tension between competing notions of Duty and Freedom as well as the often, selfish motives behind familial piety. Jhumpa ultimately suggests that people may use the excuse of familial duty for their own ends, and thus creates a complex and nuanced set of characters whose dueling impulses often land them in difficult situations.

Subhash and Udayan are a year apart but look and behave like twins, and their independence creates a sense of reluctant duty in their relationship. Their closeness is clear from young age, as subhash is held back starting school and beings a year because Udayan wants to be in class with his brother. As the two grow up, Udayan and Subhash explore their city and get into trouble together, with Udayan almost always taking the lead. For example, Subhash repeatedly follows Udayan on sneaky escapades into the Tolly club, an exclusive country club. Despite the imbalance in power between brothers, they do look out for one another- most notably when Udayan flings himself in between Subhash and a police officer who beats him with a putting iron when the two young boys are discovered breaking into the Jolly club one evening.

Eventually, subhash even helps Udayan go around Tollygunge slathering communist slogans in red paint on the walls of the neighborhood. Subhash feels reluctance to do these things but fears "that he and Udayan would cease to be brothers, were subhash to resist him". So deeply dependent is Subhash on remaining close to his brother that he makes self- sacrificing decisions on Udayan's behalf, establishing early on the shape their relationship will take and the patterns that will cone to define it throughout their lives.

Subhash remains dedicated to his brother even after udayan's death. Upon travelling home to subhash witness the pain of Udayan's widow Gauri who is pregnant with Udayan's child, and who is being treated poorly by the mitras on the hopes that they will be able to drive her out and remove her from the unborn child's life. He persuades her to marry him and migrate, saying that "in America no one knew about the movement, no one would bother her" (TLL , Pg. No. 141).His actions are primarily fueled by a sense of fraternal responsibility. Despite not cowing to Udayan's accusations of betrayal at the time, Subhash feels that in leaving India and going to the United States, he did effectively abandon his brother. He believes that he was "unable in the end to protect" Udayan when, as children, they had always looked out for one a another. It is this guilt—itself based in a sense of duty—that leads him to protect and care for Udayan's wife and child.

While this appears to be a remarkable sacrifice, Subhash has his own reasons for shouldering such a burden. His admission of his attracted to Gauri, as well as the fact that he is tired of being cut off from his family and Indian culture in Rhode Island, muddles the selfless nobility of his actions. Furthermore, what is implied but never outright expressed in the novel is Subhash's desire to become more like Udayan. Subhash always felt that Udayan was the family favorite, the adventurer, the trail-blazer. Subhash saw going to the United States as taking a step Udayan could never take, and now sees marrying Gauri—and, in turn, becoming a father—as yet another way in which he can, on some level, finally surpass his brother.

Subhash thus integrates his own wishes as he weighs the possibility of marrying Gauri, demonstrating a distinct overlap of desire and duty. Udayan had married Gauri against his parents' wishes. Gauri was a dark-skinned young girl who studied philosophy. Subhash persuades Gauri to marry him and accompany him to America where she could pursue her study in philosophy. They marry and head for America where they raise Gauri and Udayan's daughter as Bela. Bela is unaware of the fact that his father was dead and Subhash was not her real father. Gauri is a rebellious woman who breaks away from traditional role of a woman, wife, mother, daughter-in-law. She decides to live on her own terms after her marriage with Subhash. Once she is in America, she decides to live like an American woman free and unfettered. She attempts to fashion herself at first by changing her physical appearance. She beings to fed uncomfortable in the saries she has always worn and decides to trade them for the clothes she sees women around campus wearing. One day subhash returns home to this scene:

"On the dressing table was a pair of scissors that he normally kept in the kitchen drawer, along with clumps of her hair. In one corner of the floor, all of her saris, and her petticoats and blouses, were lying in ribbons and scraps of various shapes and sizes, as if an animal had shredded the fabric with its teeth and claws. He opened her drawers and saw they were empty. She had destroyed everything."(TLL, P.166)"

She gets a short, bobbed hair in place of her long black hair. Though she is married, she has an intense liking for an unknown man and out of sexual excitement, masturbates in a public bathroom. She attends her philosophy class while her little daughter is left alone at home "based on the fact that they spent time apart". Gauri's relationship to her daughter Bela—or the lack thereof—further calls into question the idea of familial duty undertaken competition against, or in tandem with, personal desire. In the early, unhappy days of Gauri's life in America, the only activity she will engage in is surreptitiously attending a philosophy class.

Her work in philosophy eventually proves so impressive that her professor, Otto Weiss, offers to recommend her for a Ph.D. program when the time comes. Gauri's desire and freedom to be a student once again, and to carve out a space for herself in this strange new country, soon subsumes not only her sense of duty to Subhash, which was tenuous to begin with, but even that toward her own daughter. Gauri immerses herself in work on her dissertation, neglecting her duties both as a wife and a mother.

Gauri is totally unconcerned about the lonely child at home. She seems to be completely indifferent towards her duties as a mother. Lahiri takes no sides or shows disfavor or dislike for her but leaves it to readers to decide whether her independence and the decision to live on her own terms is a worthy resolve. Does independence mean renunciation of duties and obligations? Can freedom be understood as synonym of 'I- Don't Care" attitude? Are human beings or for that matter any living creature really independent in literal sense?

Lahiri asks no question but the questions do surface from the reading of the novel, no doubt.Gauri throws away all her conventional duties and obligation for freedom and personal gratification. However, she experiences no fulfillment or inner happiness. She has married Subhash but never truly loved him. Subhash acts out of the sense of duty towards his dead brother, his widow and the child inside her womb.

Gauri knows that she is failing as a mother, and though she carries a good deal of guilt about that failure, she ultimately feels she never asked for the life she has been given in the United States. Soon, Gauri abandons her shaky ties to that life entirely. When subhash takes Bela back to India for a trip as a child, her grandmother asks her that your mother didn't teach you to keep your hair in tied way. But she confused that her mom also have short hair like a male one and she never told about the olden customs to me, Here Gauri's character pointed as uncared mother.

"My address is uncertain, but you can reach me care of the university. I will not ask anything else of you; the money they offer will be enough. You are no doubt furious with me. I will understand if you do not wish to communicate. I hope that in time my absence will make things easier, not harder, for you and for Bela. I think it will. Good luck, Subhash, and good- bye. In exchange for all you have done for me, I leave Bela to you.(TLL,P.162)"

And after a week they return to an empty house; Gauri has left for California, leaving behind only a letter in which she half-heartedly apologizes to Subhash and tells him that she is leaving Bela to him. Gauri has followed her heart's desire—to forge a career in academia—and abandoned her duty to her child Gauri adopts the American notion of freedom focusing on individual independence, personal progress and life with no family obligations Gradually, she distances herself from Subhash and Bela almost dumping them as inessentials for her. On the other hand, Subhash devotes his time and energy in raising Bela like a doting father.

"Instead, after graduating, she moved not terrible far away from him, to Western Massachusetts, Where she got a job on a farm (TLL,P.169)

Time comes when Bela lives like a nomad changing jobs now and then. She wanders in different parts of the country for work. Subhash continues to provide her unconditional love and support. Bela often returns home to seek shelter and care. Subhash's heart lingers on hope that someday Bela will give him shelter in her heart. Subhash feared that if Bela came to know the fact that he was not her father, it would break their relationship forever. knowledge that her father was Subhash's dead brother brings them together.

"In the darkened hallway, she could not see the tears already forming in his eyes. All night they stayed up. Until it grew light again, he attempted to explain. I'm not your father. Who are you, then? Your stepfather. Your uncle. Both those things. She refused to believe him. She thought something had happened to him, that he'd last **(TLL,P.201)**"

Finally, Bela come to know about her parentage first she think that he is playing with her after a while, he narrate how Udayan was killed and in which situation she was born. Subhash worried that she might have leave him but she says that even though biologically I'm the daughter of Udayan but you are my really father. She understands Subhash's faith in genuine bond of love and duty which ultimately unite them in love. This also removes Gauri out of their life forever.

At the center of the novel is Gauri's Indifference as a mother. By and by, she is so self-absorbed that she cares neither for her husband nor for her daughter Bela. She became obsessed with philosophy a discipline that is profoundly connected with problems of life, love, destiny, God and so on. The critical preoccupation with philosophy makes her indifferent towards actual human life, love, and family bonding. Subhash on the other hand plays the role of a mother in addition to the role of a father. He is an epitome of sacrifice, love, and care. Gauri's selfish attitude makes her a character that readers may not love but Lahiri does not want her to be detested.

She is at the most an example of a woman who chooses individual freedom over duties and relationship. She becomes somewhat flat character and lacks philosophical depth and inner conflicts. Its sensitivity and indifferent attitude towards her child and husband benumbed her psyche. She lacks the true feminine sensibility which not only defeminizes her but dehumanizes her.

The central theme of *The Lowland* is need for love, companionship and familial bond. It also deals with how belligerent political philosophy affects human lives. Jhumpa Lahiri was recently in India to participate in Jaipur Literary Festival. She called herself a writer without a real language. She said that the term global literature is misleading. A great work is always local as well as global, temporal as well as universal. Lahiri stated that she was deeply interested in the idea of a family. She said that the family bonding is a complex issue involving many dysfunctions and dissimulations.

She realized that there is a great divide between the inner and outer lives of the people. In India, the social boundaries are quite porous which makes the inner lives of the people rarer and richer. In the USA, one remains locked in airtight apartments completely cut off from people outside can be assumed that her lack of however, his fear proves wrong. The societal expectations internalized by Subhash, and indeed for some time by Gauri herself, seemed to dictate that Gauri would capitulate to the role of wife and mother, sacrificing her own desires in favor of duty to her family. Instead, Gauri chooses, in the end, to carve out her own agency. Though the pain of her choice to leave Bela haunts her, Gauri is too grateful for her freedom to ever fully apologize for her choice, making her character a radical in many ways.

CHAPTER -III

CONCLUSION

Jhumpa Lahiri is a prominent Indian American novelist and short story writer. Her works focus on Indian Living in the USA and their cultural tensions. She images India as a she has lived abroad. In The Lowland, she narrates the story of two brothers. The younger one is Naxalite who is killed in a marshy land near Calcutta in a police encounter. His pregnant wife Gauri accompanies the elder brother of her deceased husband to the USA and marries him. In the USA, Gauri is trapped in a permissive life style abandoning her duties as a mother and husband. She is completely disconnected from her family while Subhash looks after her daughter Bela like a true father. At last, Bela comes to know that Subhash is not her deal father but contrary to Subhash's fear. She is united in love with her God father. The novel questions Gauri's indifferences to familial duties in favor of Independence.

The Lowland is a sweeping, ambitious story that examines in intimate detail the intersection of the political and the personal, encompassing nearly 50 years of Indian and American history through the lives of one family. The novel ripples out from the beginnings of the Naxalite uprising in West Bengal in 1967. Two brothers, Subhash and Udayan Mitra, are attracted by the radical communist movement while at university in Calcutta. But Subhash, the more cautious and sensible of the two, quickly perceives the danger involved and withdraws, leaving to study in the US. Udayan, left behind, becomes more entrenched in militant politics, believing that violence against the state is justified in the name of revolution.

It's not much of a spoiler to reveal that, early on, he is arrested and executed by the police on the lowland behind their parents' suburban house, supposedly for his part in a violent crime. Udayan had given his life to a movement that had been misguided, that had caused only damage, that had already been dismantled.

The only thing he had altered was what their family had been." The novel pivots on this moment of Udayan's death. He leaves behind a young widow, Gauri, a fellow student already in the early stages of pregnancy. Out of a sense of duty to his brother, and to save her from a life of drudgery in Calcutta, Subhash marries Gauri and takes her back to Rhode Island. Gauri eventually leaves, and Subhash raises Bela alone in her absence. As his identity as Bela's father becomes the center of his life, he must wrestle with his own feelings of inadequacy and the nagging sense that he is an imposter, doomed to forever follow in his brother's footsteps despite all his efforts to the contrary.

The Lowland by Jhump Lahir in talks about the idea of conflicting values of self-actualization from Indian woman who lives in India and transforms into Indian immigrant woman who lives in America. Based on the analysis of those three characters using Gilligan's Stages of the Ethic of Care, it can be concluded that actually Lahiri wants to show that Gauri as an Indian woman has conflicting values of self-actualization from Indian woman who lives in India to be Indian immigrant woman who lives in America seeing from the failure of Gilligan's stages of the Ethic of Care by her, compare with others two characters, Bijoli as the representation of Indian woman who lives in India and Bela as the representation of Indian-American woman who successfully accomplish all the goals of three stages of the Ethic of Care by Gilligan.

The writer discovers that Lahiri tends to be feminist with her idea that implemented to female characters in her works. She creates different characterization of Indian woman characters in her works yet all of them have their own feminist idea in herself as a woman. Moreover, Lahiri also creates three different images of Indian women and the consequences of the action that has been taken by them. Lahiri creates Gauri character as a representation of Indian woman who transforms to Indian immigrant woman who lives in America with the feminist idea regarding the self-fulfillment in seeking the equality in education and release herself from the tradition that restrain herself in India. Bijoli as the representation of Indian woman who lives in India also has a feminist idea in herself as an Indian woman who follows the tradition

Lahiri describes Bijoli as an Indian woman who lives in India and can fulfill her own needs and at the same time can also give the contribution to the financial condition of family by having a decent work in sewing. Bela as the representation of Indian-American woman has a feminist idea in herself by being an independent and hard-working mother. Furthermore, from the analysis the writer found that Lahiri creates an Indian woman who lives in India differently from others Indian woman in her surroundings. From her works, She portrays Indian woman who lives in India as a woman who is smart, independent, and brave. Lahiri also depicts the lives of Indian woman who moves to America and start to actualize herself, to find a self-fulfilment by pursuing her interest in education. Yet, from the explanation above, the writer believes that Lahiri seems want to reconstruct and straighten the conflicting values of Gauri as Indian woman who transforms to be Indian immigrant woman and thinks by moves to America, she can free herself to pursue her own interest and ignore her nature role as a woman by creating another two characters that are different from her.

Through Bela and Bijoli characters, the writer found that Lahiri wants to reveal, straighten, and gives overview how a woman supposed to be. By creating those two characters that are successfully accomplish her own self-fulfillment at the same time, can still follow her nature as a woman, especially as a mother and wife, Lahiri wants to show that Gauri has conflicting thought and action in understanding the values of herself actualization

Furthermore, through the description about Gauri character as the representation of Indian woman that has conflicting values of self-actualization, the writer found that Lahiri as a female author wants to remind others woman in society, who reads her work through the description of other two female characters that she wants to show the intension of women who can accomplish herself fulfillment and at the same time can successfully follow her nature role as a wife and a mother. The writer found that Lahiri also wants to show that whether an Indian-American woman, Indian immigrant woman, or Indian woman who lives in India, they can keep pursuing her interest and at the same time can follow her duty as a wife and a mother without have to choose just pursuing her interests and being Indian immigrant woman who lives in America yet ignoring her nature as a wife and mother.

The writer believes that Lahiri is a writer that value and celebrate the role of women as mother and wife yet at the same time also value the self-interest of women which she describes through others two characters in her novel.

She creates women characters that would be able to seek equality in terms of education and work yet at the same time keep value her nature as a woman, especially as a wife and mother. Moreover, from her novel, she also wants to reconstruct, straighten the understanding of women, particularly Indian woman and remains other women through Gauri's character who prefers to pursue her interest and negating her feminine self at the end will end up her nowhere and will not find peace, yet a miserable condition as a woman compared to other characters in the novel that she left behind in the beginning for her own selfishness.

Gauri in America declared herself different from other Indian woman and accepted the American Feministic way in her outlook. But in other way for her this was her response to get rid of herself and her past, from her natural beauty which Udayan used to admire. This white Feministic approach towards life leads her to economic and Family freedom in short Independence. She preferred to study because her grandfather died with a book on his chest who was a professor of Sanskrit. She wanted to study and teach philosophy so that she could solve the mystery of time.

It seems that from childhood she was a mystery to herself and that might be the reason she could grasp the philosophy so easily. Her travelling to unfamiliar places, her fragmented existence and above all her drastic decision made her a woman with two sides of freedom and Duty in her life in Californian, an honesty teacher and a dishonest wife and mother.

She used to attain conferences to maintain visibility and status, a fake status. It is said like in love nothing can be destroyed forever and in Gauri's case self- destruction was her revenge to Udayan whom she loved dearly. So even through, she was trying to keep herself away from Bela, she used to search her on interest sites.

All and all Gauri throughout her life paid the price for going after her dreams and at the end left alone regretting for her mistakes. Lahiri framed Gauri and all her characters in such a way to show her choice between freedom and Duty.

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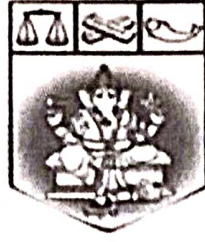
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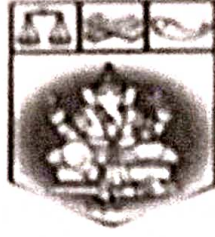
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CHAPTER - I
INTRODUCTION

Introduction

At present, Internet is a very important tool used by the students for education and also other various purposes like entertainment. Many academic and research institutions provide internet service to students, teachers as well as researchers. Nowadays students access to the internet more frequently to collect information for their homework. Thus internet has become very popular among the students. Internet also increases the skills and capabilities of the students that can facilitate their studies and professional life. Therefore we need to acquire much information about internet to explore the relations with other variables regarding educational contexts which are significant for students.Internet should be ensured for both students and teachers to facilitate research, teaching and communication. Students also use the internet greatly to enrich their academic work. Purpose and impact of using the internet and the overall perceptions towards the internet.

INTERNET

The Internet (or internet)[a] is a global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP)[b] to communicate between networks and devices. It is a network of networks that consists of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless, and optical networking technologies. The Internet carries a vast range of information resources and services, such as the interlinked hypertext documents and applications of the World Wide Web (WWW), electronic mail, telephony, and file sharing.

Wireless hotspots/ Wi-Fi Internet

Wireless hotspots and Wi-Fi both are wireless connections to the Internet. They don't need wires and cables to give access to the internet to the devices. It is a very common type of internet type these days. Wireless hotspots and Wi-Fi connections are use in many public places, such as airports, cafes, and hotels. Access to Wi-Fi will be automatically detected by your phone or other device and can get benefited from it.

Phone Sim Internet (2G/3G/4G)

smartphone gives you the option to connect to the Internet. You can have access To the Internet through your phone provider's 3G or 4G network. Some tablets which have a mobile sim card port can also have access to the 3g 4g internet. Users can also buy add-on devices that allow other computers to use a cell phone network too.

Online Services of Internet

The Internet provides different online services. The Internet allows having access to a huge amount of information such as text, web, email, graphics, online gaming, sound, social media, and software updates over the internet. The examples of online services provided by the internet are further explained:

Web:

The web is a collection of websites stored in web servers and connected to local computers through the internet.

Email:

it is a simple method to send and receive messages through the internet.

Online Gaming:

online games are also available and are provided by online service of internet. It is a good online source of entertainment.

Social Media:

these are the websites and apps that allow its users to view and share social media content.

Impact of internet use

Internet for social media. Deviations social behavior is felt most noticeably at this time include less or do not want to hang out with peers. Students are more likely to confine or cool to enjoy interacting via social media than hanging out with friends around, they are more focused in the virtual world, regardless of what was happening around him,

Internet to learn and seek information. The internet is the easiest to meet the needs in finding the information we want, news and a variety of necessary information can be found on the internet, the way in which it was very easy, simply by typing the name of a website address or search for it with the search engines, in seconds the information that we find we get. This happens because basically their individual needs are very diverse, so that their needs are what caused the motive to find information on a medium that most considered accurate and fast, in this case the Internet is widely used because it offers a variety of literature and references of knowledge in accordance with user needs.

Internet to watch youtube. Youtube is a website that provides a wide range of videos from the video clip to the movie, as well as videos made by users themselves youtube, youtube is one of the largest video service provider at this time, the negative effects can be used to search, video- violent video, the video can broken person's name.

Internet to keep up with technology. The trend among teenagers was once spread through television or radio, is now living in an era where all information is available on the Internet makes the Internet a forum for distributing trend, many trend created by young people for the world's attention. Later, several trends in social media widely heard in the ears of society, keeping abreast of increasingly sophisticated technology is one of pleasure, especially for adolescents who happy to explore all the latest things they think are very attractive, whether it was spotted and just part of the trend or until lifestyle, moral decadence among students, who always seeks the fulfillment of material desires, has led some students to be rich in material but poor in spirit.

The Pros

Boost connectivity

The internet is a global networking platform and the guiding light of today's technology. Due to its massive growth, gadgets like laptops, tablets, and smartphones have become commonplace. The mobile internet patterns show people spend more time on their devices sending instant messaging, visiting social media sites, web browsing, and listening to music. Using instant messaging services and video calls, one can easily connect with family, friends, and acquaintances living thousands of miles away.

Enhanced communication

The emergence of the internet as a communication tool has had a multifarious effect. Most people use the platform for socializing, accessing information, and for career and commerce. Popular information includes political stories, health tips, and government services. Also, people across the world use social media Apps such as Facebook, Twitter, and WhatsApp to communicate with family and friends. The Apps are very engaging and easy to use. It takes only a few minutes to write and share a meaningful text. On top of these benefits, both small and large businesses can publish their information. With expanded internet access, you can easily find a hotel , a TITAN authorized dealer near you when planning to buy a watch, and evidently everything else.

Promote education

The internet has made education more fun and convenient. Students can now access tons of study materials and video tutorials without breaking a sweat. With platforms like Google, you can ask any question and receive instant feedback. People interested in pursuing various careers and e-commerce are also turning to the internet to apply for jobs, attend online classes, and make payments remotely.

The Cons

Social life problems

Studies show the internet has had a net positive impact on education but has been negative when it comes to morality and politics. Also, people who spend excessive amounts of time on social media platforms tend to be lonely and socially isolated. Excessive internet engagement can also impact self-esteem. A report published in 2020 indicates up to 60% of social media users reported suffering from negative self-esteem issues, while 80% said it was easier to be deceived by others using the information they share online.

Cybercrimes

The popularity of the internet has also attracted the attention of bad elements in society. Crimes that take place over and around the internet are described as cybercrimes. These crimes are often manifested through identity theft, phishing, fraud, and hacking. With these revelations, the dark web has become a popular platform to trade stolen data and materials. Other vices perpetrated over the internet include cyber-bullying, cyber-stalking, internet predation, child pornography, and spreading hate. Individual and corporate users also stand a risk of being attacked by computer viruses and ransomware. All these factors can lead to loss of money, valuable information, and damage to hardware infrastructure.

Developmental effects

The child's normal growth and development can be impacted negatively by excessive internet use. And, this is mostly attributed to easy access to illegal or age-inappropriate materials. Studies show excessive internet use among children can negatively impact their attention span, critical reasoning, and language acquisition skills. Children addicted to mobile-supported games like video games may also be pushed to lead sedentary lifestyles and forgo healthy exercises and other outdoor activities. If left unchecked, extended screen time can also cause several health problems, including stress, chronic insomnia and feelings of anxiety in adults.

CHAPTER -II

REVIEW OF LITERATURE

Literature Review

Vani Madhavi, et.al (2013) found that mostof the students were using the internet service in the institute. Butthese students wereusing it for entertainment and time pass and not for academicpurposes and a majority of the students had not knowledge about any medical websites. Only a few students used internet for online exams

Unnikrishnan, et al. (2008) noted a significant relationship between the study and the purpose of Internet use. Majority of the students preferred internet over text books because it accessed the latest knowledge. Majority of the students wanted that computer and internet use among students should be encouraged in institutions. The researchers also observed that most of the final year students spent less than three hour s with their computer and went online in one week.

Adithya Kumari, H. and Mahadeva murthy, M. and Hydarali, (2013) argued that internet was a most common and useful instrument for all students. The results of the study showed that students used the internet for several objectives, and most of the students also faced many problems while surfing the Internet. A large population used the internet every day. The researchers recommended the teaching institutes to educate and advise students to use Internet.

Shashi Kumar et al. (2012) discovered that internet use among students could stimulate their sexual attitude, behaviour and influences their premarital sex position. Further, they also came to know that internet use influenced their study and academic performance. They also found a significant association between sexual interaction and use of internet. Most of the boy shad an unmonitored internet service and they use it for sexual activity while no such relationship was found in girls. It was common for students to be exposed to sexual content on internet. The study showed note worthy relationship of having sexual interaction with academic performance and

achievement specifically in boys. No significant relationship was found between the duration of watching television and using internet on academic achievement and sexual activity.

Rajeev Kumar and Amritpal Kaur (2006) revealed in their study that majority of students were using Internet for more than 2 years. They found that almost half of the respondents used internet for 2-3 times in a week while only 5 percent used it every day. Most of the respondents used the Internet for educational objective while half of the respondents used it for research purpose and least number of students used the Internet for entertainment aims. A majority of the students also faced some difficulty while surfing the internet such as slow internet speed, slow download speed, difficulty in getting relevant and reliable information and some privacy difficulties. The students found internet information more valuable and it helped them to improve their professional competence. Due to the update and instant availability of information, their dependency on internet was increased and 44.8 percent respondents felt that the Internet had improved their professional aptitude. Whereas some students also claimed that no doubt internet had revolutionised their life but it could not replace library.

Fayaz Ahmad Loan (2011) found that students from different disciplines used internet for communication, information, entertainment and academic purposes. But majority of the students accessed internet for knowing new things, chatting and emailing. Frequency of using internet was varied among the students one third of the students used it for 2/3 times in week while many users accessed internet daily basis. All students faced some problems while accessing the internet. Some of the students did not get reliable and valid information due to overload of information while others faced slow speed, downloading facility, language barriers etc.

Sampath Kumar and G. Manjunath, (2013) researched to find out the academic impact of internet on teachers and researchers. This study found a high use of the internet by teachers and research students in university. Most of respondents used internet service to support their study, research and teaching. They accepted that they learnt to use the internet with the help of friends. The results of study also showed that internet use has improved their academic performance. The internet helped them write to good research papers and more papers. The researchers recommended that university should provide internet facility to its research scholars and motivated the students to use the internet for their research and academics. The study also advocated that there should be training on how to use the internet for academic and research.

Singh Dhyan and Nutan Sharma (2013) viewed that most of the students used internet on the direction of their teachers for educational purposes and the use of internet among college students was increasing swiftly day by day. The students who had no internet service at their homes, they used it at colleges and cyber cafes. It was also discovered that internet had changed the activities of playing, reading, outgoing, and watching television since they started accessing the internet. The authors also found some positive impacts of internet use in students. If the internet was used for one-two hours in a day, it made students energetic and fresh. But, who spent much times on internet feel some anxiety, irritation in their behaviour, pain in eyes, and other disorders. They also concluded that internet was making students dull, passive and uncreative because they found readymade information on internet.

Barthakur (2012) conducted a study to find out the connection between internet use and mental health problems. In the total 268 respondents, 24.6% testified frequent problems due to use of internet. The researchers found several negative effects of internet addiction. A large population from the sample accepted that excessive use of internet effected their work, social life and anticipation. Heavy users of internet felt loneliness, depressive, anxious and other disorders. The researchers recommended that internet users at the college and workplace should be screened and interventions should be planned to prevent mental health problems.

Anita (2013) summed up that there was a significant connection between residential background and emotional maturity of Internet users. The study also confirmed that there was an interactive influence between academic discipline and regularity of Internet use on emotional maturity of Internet users.

Sugata Mitra and Vivek Rana (2001) provided internet facility to the slum children in New Delhi. The researchers observed that children seemed to understand the things and could use the technology easily. Children did not find language and education any significant problem to learning. They also argued that internet technology had been spreading promptly in India like other countries of the world but internet users in India were mostly restricted to the urban areas.

A survey conducted by TCS on 17,500 students across 14 Indian cities summed up that 75% of students used internet to research for colleges while 62% of students accessed the Internet for social reasons like chatting and connecting with their friends. The report also found that one in five students spent nearly 2-3-hour on the Internet everyday while one in five spent between

one-two-hour. The report also concluded that 74% of respondents used Facebook to communicate while 54% of students used it for Messaging

Chetan Sharma (2012) discovered that almost 99% students of all the four universities accepted internet as a significant tool of research. Teachers and researchers used internet for establishing scholarly communication and they spent a heavy time on Internet and had adequate experience of Internet use. Almost 51% of sample used internet every day while 33% respondents used it two-three times per week. Respondents faced many problems while surfing internet. Further, the researcher recommended that the university should take some adequate steps to make internet service properly so that both teachers and researchers could use it for their betterment.

The study of **Chongtham Beda Devi & Nil Ratan Roy (2012)** showed that the internet use had affected the research and academic work of Assam University. The study clearly showed that the younger generation had acknowledged the Internet as a significant medium for gathering relevant knowledge and information for their academic and research work. The study also found that internet played an important role in their everyday life. Maximum respondents used internet at night for mostly their academic works. Out of 100 students, 24% used the internet less than for an hour in a day, 17% used for one hour, and majority of the students used two hour.

Manoj Kumar Sinha, Sudip Bhattacharjee and Sucheta Bhattacharjee (2013) carried out a study to investigate the impact of ICT and Internet use among the College students. The study revealed that the Internet use had generated a significant influence upon users in their research work, academic, teaching, practical work and assignments. The results of the study clearly showed that new students had claimed the internet as a great tool for obtaining to the needed information for academicians and researchers. The researchers suggested that the training should be provided to the college library users. Then they could use internet effectively for their research work and education. Majority of students went to library to keep them up to date but they did not access appropriate material there. There internet can be a good source for their curiosity. They also found that internet had attracted the students due to its easy access of providing information on any topic. Most of the students faced some problems to use it smoothly and slow speed on internet.

The results of Gunamala Suri and Sneha Sharma (2012) study show that there is a significant impact of internet use on respondent whereas the attitude towards e- learning has no significant effect of internet use. A majority of respondents are interested to learn the computer and they have positive attitude towards e-learning also.

A research carried out by Preeti Mahajan (2006) explored that Internet had a great effect on the academic atmosphere of the students. The students of the sciences were using fullInternet service provided by the university. Research students of humanities and social sciences considered their university library as the last choice for finding information. The study also concluded that most of the science research students nearly 90% preferred to use Internet instead of the library while the students of social sciences and humanities used library more than internet.

Dineshan Koovakkai and Muhammed P.(2010)revealed that the adolescents in rural areas used the internet for manipulating information, downloading obscene materials pictures and, pornography, and sending unwanted messages to their girl and boy fellows. They also found that the main objective of internet use was to do fun and entertainment. There were differences between rural and urban youth in understanding the internet ethics and laws. Urban youth were more knowledgeable than rural youth. Most of the students copied the internet information for their homework and assignments. It was also analysed that internet abuse was more in rural youth than urban adolescents because rural youth were unknown and passive about the importance of the issues. They sometimes involved themselves in such activities because of their ignorance and innocence. The researchers advised to train and educate the adolescents about the dangers and benefits of internet use.

Debarati Halder and K. Jaishankar (2013) said that the use of internet among adolescents was satisfactory but the awareness and knowledge of cybercrime was less. They were not aware about privacy matters and plagiarism problems. The study found that students used YouTube and other sites for viewing obscene movies and clippings but at home they did not surf such sites due to the fear of knowing about it by their parents.

<div align="center">

CHAPTER -III

RESEARCH METHODOLOGY

</div>

Introduction:

      This chapter deals with the methodology adopted for the study . It covers aims & objectives of the study, research design. Pilot study. universe, sampling , and scope , pre - test .

Objectives of the study:

1. Find out the frequency of internet use.
2. Find out the most preferred location of internetuse.
3. Find out the purposes for browsing the internet.
4. Find out the most used internet service.
5. Find out the influence of internet use on academicperformance.

Title of the study:

" A study on the impact of internet usage among Undergraduate students."

Area of the study :

The researcher conducted the study at Ganesar College of Arts and Science in melaisivapuri at pudukkottai district .

Research design :

      The formulation of research design is an indispensable part of research . Hence the research adopted descriptive research design which aims at describing the variables in the present study the research describes the positive and negative of the respondents in internet usage.

Universe and Sampling

The study was conducted at Ganesar College of Arts and Science in Melaisivapuri . The size of the universe is 100 from that the researcher selected 50 as sample by using through convenient sampling method .

Pilot study :

In order to know the feasibility of conducting the study the researcher approached students in Ganesar College,melaisivapuri. The researcher obtainable permission to conduct the study and had discussion with Undergraduate students .

PRE - TEST:

The pre - test was conducted on 10 respondents in the study area arca The result information was collected from the respondent with the help of questionnaire found to be satisfactory and hence the interview schedule , used for pre testing . Were also including in the final sample .

DATA COLLECTION:

Data was collected from the Undergraduate students.. Average of data collection for 3 to 5 days the collection data was done from 20.02.2023 to 24.02.2023.

ANALYSIS OF DATA:

The data were analyzed by using computer. The data were organized and transcribed before entering in to the computer. Scoring procedure was adopted tabulated keeping in view of the objectives of the study.

CHAPTERIZATION:

a) The first chapter deals with general information about the Internet.

B) The chapter second deals with the review of literature to the researcher

c)The chapter three deals with Research methodology

d)The chapter four deals with analysis the collection of data

e) The chapter five deals with findings, suggestion , and conclusion

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

TABLE-1

DISTRIBUTION OF THE RESPONDENTS ACCORDING TO SOCIAL MEDIA USAGE

S.No	VALID	FREQUENCY	PERCENTAGE
1	Rarely	2	4
2	Often	25	50
3	Always	23	46
	TOTAL	**50**	**100**

From the table 1, the answers of 50 respondents 23 respondents or 46% answered always use the Internet for social media, 25 respondents or 50% answered frequently use the Internet for social media and person or 4% of respondents who answered rarely utilize for social media.

TABLE-2

DISTRIBUTION OF RESPONDENTS ACCORDING TO ONLINE GAME

S.No	Valid	Frequency	Percentage
1	Rarely	5	10
2	Often	30	60
3	Always	15	30
	TOTAL	**50**	**100**

From the table 2, the answers of 50 respondents 15 respondents or 30% answered always utilize the internet for online games, 30 respondents or 60% answered frequently use the Internet for online games and only 5 people or 10% of respondents who answered rarely utilize internet for online games.

TABLE-3

DISTRIBUTION OF THE RESPONDENTS ACCORDING TO THEIR ONLINE SHOPPING

S.No	Valid	Frequency	Percentage
1	Rarely	20	40
2	Often	18	36
3	Always	12	24
	TOTAL	**50**	**100**

From the table 3, the answers of 50 respondents 18 respondents or 36% answered use the Internet for online shopping, 20 respondents or 40% said rarely use the Internet for online shopping and 12 respondents or 24% answered frequently use the Internet for online shopping.

TABLE-4

DISTRIBUTION OF RESPONDENTS ACCORDING TO SEEK INFORMATION

S.No	Valid	Frequency	Percentage
1	Rarely	5	10
2	Often	17	34
3	Always	28	56
	TOTAL	**50**	**100**

From the table 4, the answers of 50 respondents 5 respondents or 34.17% answered rarely use the Internet to learn and seek information, 17 respondents or 34.17% answered frequently use the Internet for online shopping and 28people or 31.67% of respondents who answered always use the internet to learn and seek information.

TABLE-5

DISTRIBUTION OF RESPONDENTS ACCORDING TO WATCH YOUTUBE

S.No	Valid	Frequency	Percentage
	Rarely	1	2
	Often	18	36
	Always	31	62
	TOTAL	**50**	**100**

From the table 5, Answers from 120 respondents 1 or 0.83% of the respondents answered not use the Internet to watch youtube, 1 person or 2% of respondents answered rarely use the Internet to watch youtube, 18 respondents or 36% answered frequently use the Internet to watch youtube and 31 respondents or 62% always use the internet to watch youtube.

<div align="center">**TABLE-6**</div>

DISTRIBUTION OF RESPONDENTS ACCORDING TO TECNOLOGICAL TREND

S.No	Valid	Frequency	Percentage
1	Rarely	10	20
2	Often	18	36
3	Always	22	44
	TOTAL	**50**	**100**

From the table 6, the answers of 50 respondents, 10 respondents or 20% answered rarely use the Internet to follow technological developments and trends and 18 respondents or 36% who answered frequently use the Internet to follow technological developments and trends. and 22 respondents or 44% always use the internet use the Internet to follow technological developments and trends.

TABLE-7

DISTRIBUTION OF RESPONDENTS ACCORDING TO USE INETERNET TO LEARN RATHER THAN BOOKS

S.No	Valid	Frequency	Percentage
1	Rarely	17	34
2	Often	10	20
3	Always	23	46
	TOTAL	**50**	**100**

Table 7 surveys are based on the learning priorities and teaching materials. Students tend to use the Internet to learn rather than using a book as their learning reference. This clearly shows the internet covering all aspects that most students need.

TABLE-8

DISTRIBUTION OF RESPONDENTS ACCORDING TO EFFECT WHEN STUDENTS FINISH USING THE INTERNET

S.No	Valid	Frequency	Percentage
1	Happy	35	70
2	Usual	15	30
3	Bored	0	0
	TOTAL	**50**	**100**

Table 8 shows the effect when students finish using the internet 35 students feel themselves happy, 15 others feel the usual, and 0 others feel bored.

TABLE-9

DISTRIBUTION OF RESPONDENTS ACCORDING TO IMPACT OF INTERNET POSITIVE OR NEGATIVE

S.No	Valid	Frequency	Percentage
1	Positive	20	40
2	Negative	10	20
3	Both	20	40
	TOTAL	50	100

The next survey is based on the opinions of each respondent about the impact of the internet that is negative, positive, or both. Most students choose positive and negative impact.

TABLE-10

DISTRIBUTION OF RESPONDENTS ACCORDING TO INTERNET USE

S.No	Valid	Frequency	Percentage
1	Rarely	5	10
2	Often	16	32
3	Always	29	58
	TOTAL	50	100

Subsequent research on the usefulness of the internet shows almost all students think that the internet is very useful. the answers of 50 respondents 29 respondents or 58% answered always use the Internet for social media, 16 respondents or 32% answered frequently use the Internet for social media and 5 person or 10% of respondents who answered rarely utilize for social media.

TABLE-11

DISTRIBUTION OF RESPONDENTS ACCORDING TO SOCIAL BEHAVIOUR

S.No	Valid	Frequency	Percentage
1	Yes	32	64
2	No	8	16
3	Both	10	20
	TOTAL	**50**	**100**

Table 11 shows students' social behaviour, clearly indicating that most students give less time to their social life. This is one of the internet shortcomings. From the table 11, the answers of 50 respondents 32 respondents or 64% answered always use the Internet for social media, 8 respondents or 16% answered frequently use the Internet for social media and 10 person or 20% of respondents who answered both.

TABLE-12

DISTRIBUTION OF RESPONDENTS ACCORDING TO SOCIAL LIFE IS INFLUENCED BY THE INTERNET

S.NO	Valid	Frequency	Percentage
1	Yes	28	56
2	No	22	44
	TOTAL	**50**	**100**

Table 12 also shows that the students' social life is influenced by the internet and the existence of outdoor activities is very little so that it can cause physical health of students to be bad .

TABLE-13

DISTRIBUTION OF RESPONDENTS ACCORDING TO INTERNET USAGE REMAINS HIGH EVERY DAY.

S.NO	Valid	Frequency	Percentage
1	Yes	35	70
2	NO	15	30
	TOTAL	**50**	**100**

Internet usage remains high every day . From the table 1, the answers of 50 respondents 35 respondents or 70% answered YES, 15 respondents or 30% answered NO.

TABLE-14

DISTRIBUTION OF RESPONDENTS ACCORDING TO LEARNING PRIORITY STUDENTS PREFER INTERNET COMPARED TO BOOKS

S.No	Valid	Frequency	Percentage
1	Yes	28	56
2	No	22	44
	TOTAL	**50**	**100**

Table 14 of the survey is based on the learning priorities and the teaching materials. Stay the same as before. Students prefer Internet media to learn compared to books. From the table 14, the answers of 50 respondents 28 respondents or 56% answered YES, 22 respondents or 44% answered NO.

TABLE-15

DISTRIBUTION OF RESPONDENTS ACCORDING TO INTERNET POSITIVE AND   NEGATIVE

S.No	Valid	Frequency	Percentage
1	Positive	36	72
2	Negative	14	28
	TOTAL	**50**	**100**

There was no significant change in this survey, the students still choose the internet as positive and negative. From the table 15, the answers of 50 respondents 36 respondents or 72% POSITIVE, 14 respondents or 28% NEGATIVE.

TABLE-16

DISTRIBUTION OF RESPONDENTS ACCORDING TO ONLINE TRANSACTION (Bank,Gpay,Phonepay..)

S.No	Valid	Frequency	Percentage
1	Yes	40	80
2	No	10	20
	TOTAL	**50**	**100**

Table 16   respondents use internet for online transaction. the answers of 50 respondents 40 respondents or 80% YES, 10 respondents or 20% answered NO.

CHAPTER- V

FINDINGS, SUGGESSTIONS AND CONCLUTION

FINDINGS

- The majority 95% of respondents use internet for social media.
- The majority 62% of respondents use internet for play online game.
- The majority 55% of respondents use the internet for online shopping.
- The majority 76% of respondents use the internet for learn and seek information.
- The majority 93% of respondents use the internet for using youtube.
- The majority 68% of respondents use the internet for technology and trends.
- The majority 91% of respondents use the internet for a day.
- The majority 53% of respondents use the internet for teaching materials.
- The majority 88% of respondents feel themselves happy.
- The majority 60% of respondent's impact of internet use is positive and negative.
- The majority 91% of respondents think internet is very useful.
- The majority 46% of respondents give less time to their social life.
- The majority 67% of respondents Internet usage remains high every day.

SUGGESTIONS

The Internet can help students study by providing them with knowledge, as well as by encouraging them to interact with other people. It also allows students to communicate and share thoughts and ideas even though they are in different countries**.**

Through the Internet, a student can learn from a variety of different sources like textbooks, blogs, and digital journals. With time, the student learns to distinguish between different sources of information. This aids them in improving their learning skills**.**

The Internet can also help a student build skills and knowledge. This is because they have access to online courses and tutorials that will help them improve their skills.

This is a very helpful way of finding employment and getting an income. Some other opportunities for students are freelancing, which gives students a chance to put their skills to use. who spend most of their time in the virtual world gradually withdraw from the real world. They soon become dependent on the internet to feel upbeat, accepted, and heard. And, when they are unable to access the Internet, they start experiencing anxiety, sadness, and depression.

Internet addiction and problematic internet use A lack of control over one's internet consumption can lead to a decrease in physical and psychological wellbeing.

Harmful effects that can result from such permeations include loss of quality of life, lack of privacy, decreased safety and security, and harm to social relations.

CONCLUSION

The conclusion that can be drawn from this research is that internet usage is the factor that influences students' life both positively and negatively including academic performance, personal and social life.Internet usage and its impact on students shows the internet accessibility, spending hours in using the internet, purposes of using the internet, and impact of using the internet on students' academic achievement, face to face relationship with their friends and families. Positive and negative impact of using the internet is proportionally equal in this study. Here, positive outcome includes academic achievement (completing course work and research work, searching in search engine for study materials, completing assignments and so on) and improving the quality of social life. Negative impacts are internet addiction, lack of face to face communication, waste of time, excessive use of social networking sites and depression. The study recommends that as the internet is regarded as an inseparable part of human life, students should conscious of using the internet. Seminars and conferences should be arranged to highlight the negative impact of using the internet on students. However, the quality uses of the internet depend on the respective study context in terms of available accessibility of the internet, individual skills and affordability of users.

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