STUDENTS PROJECT

ACADEMIC YEAR 2020-21

கணேசர் கலை அறிவியல் கல்லூரி, மேலைச்சிவபுரி

தேர்வு மையம் எண்: 010

ஏப்ரல்-2021, எம்.ஏ திட்டக்கட்டுரைத் தலைப்புகள்

வ.எண்	மாணவர்கள் பெயர்	பதிவு எண்	கட்டுரைத் தலைப்பு	வழிகாட்டியின் பெயர்
1.	கரு.அழகேஸ்வரி	P19100501	தமிழ்விடு தூதில் புராணச்சிந்தனைகள்	முனைவர் பொன்.கதிரேசன்
2.	கு.ஆனந்த்	P19100502	சேக்கிழார் பிள்ளைத்தமிழ் - ஓர் ஆய்வு	முனைவர் பெரி.அழகம்மை
3.	க.அட்சயா	P19100503	"வாதவூர் வள்ளல் பிள்ளைத்தமிழின் அமைப்பும் சிறப்பும்"	முனைவர் பெரி.அழகம்மை
4.	இ.செல்லப்பிரியா	P19100504	"திருமங்கையாழ்வார் பாடல்களில் சிற்றிலக்கியக் கூறுகள்"	முனைவர் மா.தமிழ்ச்செல்வி
5.	வை.தேவி	P19100505	தண்டலையார் சதகத்தில் பண்பாட்டுச் சிந்தனைகள்	முனைவர் சே.பிருந்தா
6.	வெ.மாலதி	P19100506	பெரியாழ்வார் பாடல்களில் பிள்ளைத்தமிழ்க் கூறுகள்	முனைவர் மா.தமிழ்ச்செல்வி
7.	ரா.நதியா	P19100507	முத்துக்குமாரசாமி பிள்ளைத்தமிழில் பக்தி நெறி	முனைவர் சி.முடியரசன்
8.	மா.பிரபாகரன்	P19100508	நந்திக் கலம்பகத்தில் கலம்பக உறுப்புகள்	முனைவர் பொன்.கதிரேசன்
9.	தெ.பிரியதர்ஷினி	P19100509	ஏரெழுபதும் உழவுத் தொழிலும்	முனைவர் கதி.முருகேசன்
10.	கி.ராகினி	P19100510	"முக்கூடற்பள்ளு காட்டும் சமூகம்"	முனைவர் ம.செல்வராசு
11.	சி.ரம்யா	P19100511	"திருகோவையாரில் திருத்தலங்கள் - ஓர் ஆய்வு"	முனைவர் வே.அ.பழனியப்பன்
12.	கே.சங்கர்	P19100512	நால்வர் நான்மணிமாலை — ஓர் ஆய்வு	முனைவர் ம.செல்வராசு
13.	மா.சுகன்யா	P19100513	"கம்பரின் சடகோபதந்தாதி — ஓர் ஆய்வு	முனைவர் சி.குறிஞ்சி
14.	ம.விஷ்ணுகுமார்	P19100514	குலோத்துங்க சோழன் பிள்ளைத்தமிழ்	முனைவர் வே.அ.பழனியப்பன்
15.	ரா.ரம்யா	P17100257	அறவியல் நோக்கில் நரிவிருத்தம்	முனைவர் கதி.முருகேசன்
16.	ச.சண்முகப்பிரியா	P18100225	சரஸ்வதி அந்தாதி — ஓர் ஆய்வு	முனைவர் சி.முடியரசன்

PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI - 622 463

நெறியாளர் சான்றிதழ்

முனைவர் கதி. முருகேசன் எம். ஏ., எம். ஃபில்., பி. எட்., பிஎச். டி.,

உதவிப் பேராசிரியர்

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403.

"ஏரெழுபதும் உழவுத் தொழிலும்" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு செல்வி. தெ. பிரியதர்ஷினி (பதிவு எண்: **P19100509**) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்:

நெறியாளர்

முனைவர்.கதி.முருகேசன்

உதவிப்பேராசிரியர், தமிழ் உயராய்வுமையம்

கணேசா கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622403

முதல்வர்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

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

உதவிப் பேராசிரியர்

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403.

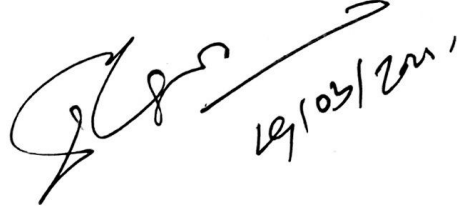"**சேக்கிழார் பிள்ளைத்தமிழ் – ஓர் ஆய்வு**" என்னும் தலைப்பில்

பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப்

பகுதிக்கு செல்வன். கு. ஆனந்த் (பதிவு எண்: **P19100502**) செய்துள்ள

இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த்

துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று

சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 27. 03. 2021

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 மா.தமிழ்ச்செல்வி எம்.ஏ.,பிஎச்.டி.,

உதவிப்பேராசிரியர்,

தமிழ்த்துறை,

தமிழ் உயராய்வு மையம்,

கணேசர் கலை அறிவியல் கல்லூரி,
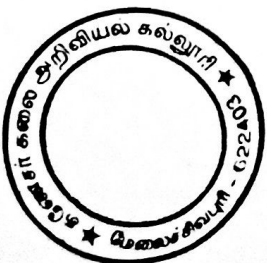
மேலைச்சிவபுரி - 622403.

"திருமங்கையாழ்வார் பாடல்களில் சிற்றிலக்கியக் கூறுகள்" என்னும் தலைப்பில் இ.செல்லப்பிரியா (பதிவு எண் :P19100504) அவர்கள் செய்துள்ள இவ்வாய்வேடு அவர் பாரதிதாசன் பல்கலைக்கழகத்தில் எம்.ஏ பட்டம் பெறுவதற்காகக் கணேசர் கலை அறிவியல் கல்லூரியில் முதுகலை தமிழ்த்துறை மாணவியாக இருந்து ஆய்வு செய்த காலத்தில் தன்னியலாகச் செய்யப்பெற்றதெனச் சான்றளிக்கிறேன்.

இடம் : மேலைச்சிவபுரி

நாள் : 27.03.2021

நெறியாளர்
முனைவர் மா.தமிழ்ச்செல்வி எம்.ஏ.,பிஎச்.டி
உதவிய பேராசிரியர் தமிழ் உயராய்வு மையம்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி-622403

முதல்வர்
முதல்வர்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

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

உதவிப்பேராசிரியர்

தமிழ்த்துறை

தமிழ் உயராய்வு மையம்
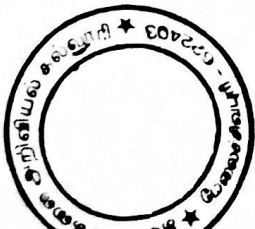
கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி - 622403

    "வாதவூர் வள்ளல் பிள்ளைத்தமிழ் அமைப்பும் சிறப்பும்" என்னும் தலைப்பில் க.அட்சயா (பதிவு எண் :P19100503) அவர்கள் செய்துள்ள இவ்வாய்வேடு அவர் பாரதிதாசன் பல்கலைகழகத்தில் எம்.ஏ பட்டம் பெறுவதற்காகக் கணேசர் கலை அறிவியல் கல்லூரியில் முதுகலை தமிழ்த்துறையில் பயிலும் காலத்தில் தன்னியலாகச் செய்ய பெற்றதெனச் சான்றளிக்கிறேன்.

இடம் : மேலைச்சிவபுரி

நாள் : 27. 03. 2021

ஸ்ரீ. அழகம்மை 27/03/2021
நெறியாளர்
முனைவர் பெரி. அழகம்மை எம்.ஏ.,பிஎச்.டி.,
உதவிப் பேராசிரியர், தமிழ் உயராய்வு மையம்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி - 622 403
புதுக்கோட்டை மாவட்டம்.

27/3/2021
முதல்வர்
கணேசர் கலை அறிவியல் கல்லூரி

நெறியாளர் சான்றிதழ்

முனைவர் மா. செல்வராசு எம். ஏ., எம். ஃபில்., பி. எட்., பிஎச். டி.,

முதல்வர் (பொ)

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403.

"**நால்வர் நான்மணிமாலை – ஓர் ஆய்வு**" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு செல்வன். கே. சங்கர் (பதிவு எண்: **P19100512**) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 27. 3. 2021

நெறியாளர் சான்றிதழ்

முனைவர் ம.செல்வராசு எம்.ஏ.,எம்.பில்.,பி.எட்.,பிஎச்.டி

முதல்வர் (பொ)

தமிழ்துறை

தமிழ் உயராய்வு மையம்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி - 622403

"முக்கூடற்பள்ளு காட்டும் சமூகம்" என்னும் தலைப்பில் கி.ராகினி (பதிவு எண் :P19100510) அவர்கள் செய்துள்ள இவ்வாய்வேடு அவர் பாரதிதாசன் பல்கலைகழகத்தில் எம்.ஏ பட்டம் பெறுவதற்காக கணேசர் கலை அறிவியல் கல்லூரியில் முதுகலை தமிழ்துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பெற்றதெனச் சான்றளிக்கிறேன்.

இடம் : மேலைச்சிவபுரி

நாள் : 27/3/21

நெறியாளர் சான்றிதழ்

முனைவர் கதி. முருகேசன் எம். ஏ., எம். ஃபில்., பி. எட்., பிஎச். டி.,

உதவிப் பேராசிரியர்

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403.

    "அறவியல் நோக்கில் நரி விருத்தம்" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு ரா. ரம்யா (பதிவு எண்: **P17100257**) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 27/03/2021

நெறியாளர்

முனைவர்.கதி.முருகேசன்
உதவிப்பேராசிரியர், தமிழ் உயராய்வுமையம்
கணேசா கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி – 622403

முதல்வர் 27/8/21

முதல்வா
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

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

உதவிப் பேராசிரியர்

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி - 622 403.

சரஸ்வதி அந்தாதி – ஒர் ஆய்வு என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு திருமதி ச.சண்முகப்பிரியா (பதிவு எண்: P18100225) செய்துள்ள ,இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

நெறியாளர்
Dr S. MUDIARASAN
Assistant Professor in Tamil
Ganesar College of Arts and Science
Melaisivapuri 622 403
Pudukkottai Dist

இடம்: மேலைச்சிவபுரி

நாள்: 29. 03. 2021.

கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

முனைவர் **சி.குறிஞ்சி** எம்.ஏ.,எம்ஃபில்.,பி;எட்.,பிஎச்.டி.,

உதவிப் பேராசிரியர், தமிழ்த்துறை

தமிழ் உயராய்வு மையம்,

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி - 622 403.

"கம்பரின் சடகோபரந்தாதி - ஓர் ஆய்வு" என்னும் தலைப்பில் **மா.சுகன்யா** (பதிவு எண் : P19100513) அவர்கள் செய்துள்ள இவ்வாய்வேடு அவர் பாரதிதாசன் பல்கலைக்கழகத்தில் எம்.ஏ., பட்டம் பெறுவதற்காகக் கணேசர் கலை அறிவியல் கல்லூரியில் முதுகலை தமிழ்த்துறை மாணவியாக இருந்து ஆய்வு செய்த காலத்தில் தன்னியலாகச் செய்யப்பெற்றதெனச் சான்றளிக்கிறேன்.

இடம் : மேலைச்சிவபுரி

நாள் : 27.03.2021

நெறியாளர்

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி

முதல்வர்

முதல்வா

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

முனைவர் வே.அ. பழனியப்பன், எம்.ஏ., எம்.ஃபில்., பிஎட். பி.எச்.டி.,
உவிப்பேராசிரியர்,
தமிழ்த்துறை,
தமிழ் உயராய்வு மையம்,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி – 622 403.

"திருக்கோவையாரில் திருத்தலங்கள்" என்னும் தலைப்பில் சி. ரம்யா
(பதிவு எண்: P19100511) அவர்கள் செய்துள்ள இவ்வாய்வேடு அவர் பாரதிதாசன்
பல்கலைக்கழகத்தில் எம்.ஏ., பட்டம் பெறுவதற்காகக் கணேசர் கலை அறிவியல்
கல்லூரியில் முதுகலை தமிழ்த்துறை மாணவியாக இருந்து ஆய்வு செய்த
காலத்தில் தன்னியலாகச் செய்யப்பெற்றதெனச் சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 27-03-2021

27/03/2021
நெறியாளர்
முனைவர் வே.அ.பழனியப்பன்
எம்.ஏ.. பி.எட்.. எம்.எஸ் சி.(யோகா) எம பில்.. பி.எச்.டி.,
உதவிப்பேராசிரியர் & ஆய்வு நெறியாளர்
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி, புதுக்கோட்டை மாவட்டம் - 622403.
மின் அஞ்சல்: arasupalani45@gmail.com

முதல்வர்
27/3/2021
முதல்வா
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

முனைவர் **பொன்.கதிரேசன்** எம்.ஏ., எம்.'.பில்., பி.எச்.டி.,
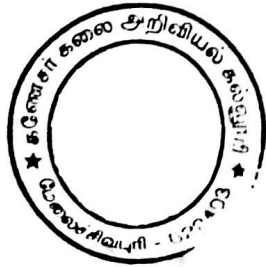உதவிப்பேராசிரியர்,
தமிழ்த்துறை,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி — 622 403.
புதுக்கோட்டை மாவட்டம்

"**நந்திக்கலம்பகத்தில் கலம்பக உறுப்புகள்**" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப்பகுதிக்கு **மா. பிரபாகரன்** (பதிவு எண்: **P19100508**) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரி தமிழ்த்துறையில் அவர் பயின்ற காலத்தில் இவ்வாய்வு தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 27.03.2021

நெறியாளர்

27.03.2021

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.அ. பழனியப்பன், எம்.ஏ., எம்.ஃபில்., பிஎட்., பி.எச்.டி.,
உதவிப்பேராசிரியர்,
தமிழ்த்துறை,
தமிழ் உயராய்வு மையம்,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி – 622 403.

"குலோத்துங்க சோழன் பிள்ளைத்தமிழ்" என்னும் தலைப்பில்
ம.விஷ்ணுக்குமார் (பதிவு எண்: P19100514) அவர்கள் செய்துள்ள இவ்வாய்வேடு
அவர் பாரதிதாசன் பல்கலைக்கழகத்தில் எம்.ஏ., பட்டம் பெறுவதற்காகக் கணேசர்
கலை அறிவியல் கல்லூரியில் முதுகலை தமிழ்த்துறை மாணவியாக இருந்து
ஆய்வு செய்த காலத்தில் தன்னியலாகச் செய்யப்பெற்றதெனச் சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 27.03.2021

நெறியாளர்
முனைவர் வே. அ. பழனியப்பன்

ஆய்வாளர் உறுதிமொழி

கரு. அழகேஸ்வரி
பதிவு எண் : P19100501
முதுகலை தமிழ்,
தமிழ்த்துறை,
கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி – 622 403.

"தமிழ்விடுதூதில் புராணச்சிந்தனைகள்" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப்பதிக்குச் செய்யப்பட்ட இவ்வாய்வேடு என் சொந்த முயற்சியால் உருவானதாகும். இதற்கு முன்பு வேறு எந்தப் பட்டத்திற்கும் இவ்வாய்வேடு அளிக்கப்பெறவில்லை என்று உறுதி அளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி
நாள்: 27. 03. 2021

ஆய்வாளர்

சிறி · அழகேஸ்வரி
கரு. அழகேஸ்வரி

நெறியாளர்
முனைவர் பொன்.கதிரேசன்
M.A., M.Phil., T.P.T.,UGC(NET).,DIP.YOGA.,PH.D.,
உதவிப்பேராசிரியர் & ஆய்வு நெறியாளர்
தமிழாய்வுமையம்,கணேசர் கலை அறிவியல் கல்லூரி,
மேலைச்சிவபுரி, புதுக்கோட்டை மாவட்டம் - 622 403.
கைபேசி: 9360607075,tamilkumarapentathir@gmail.com

நெறியாளர் சான்றிதழ்

முனைவர் சே. பிருந்தா எம். ஏ., பிஎச். டி.,

உதவிப் பேராசிரியர்

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403.

"**தண்டலையார் சதகத்தில் பண்பாட்டுச் சிந்தனைகள்**" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு வை. தேவி (பதிவு எண்: **P19100505**) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 27.03.2021

சே. பிருந்தா
27/3/2021
நெறியாளர்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி
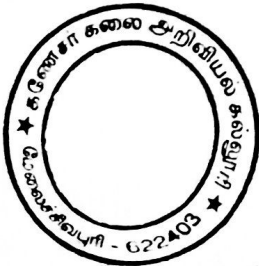
முதல்வர்
கணேசர் கலை அறிவியல் கல்லூரி
மேலைச்சிவபுரி

நெறியாளர் சான்றிதழ்

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

உதவிப் பேராசிரியர்

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி - 622 403.

       முத்துக்குமாரசாமி பிள்ளைத்தமிழில் பக்திநெறி என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு திருமதி ச.சண்முகப்பிரியா (பதிவு எண்: P18100225) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

நெறியாளர்

Dr S. MUDIARASAN

Assistant Professor in Tamil

Ganesar College of Arts and Science

Melaisivapuri 622 403

Pudukkottai Dist

இடம்: மேலைச்சிவபுரி

நாள்: 29.03.2021
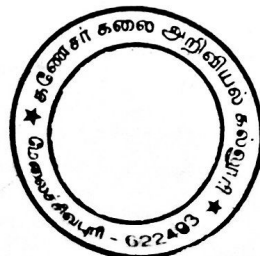
கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி

முனைவர் மா. தமிழ்ச்செல்வி எம். ஏ., பிஎச். டி.,

உதவிப் பேராசிரியர்

தமிழ்த்துறை

கணேசர் கலை அறிவியல் கல்லூரி

மேலைச்சிவபுரி – 622 403.

"பெரியாழ்வார் பாடல்களில் பிள்ளைத்தமிழ்க் கூறுகள்" என்னும் தலைப்பில் பாரதிதாசன் பல்கலைக்கழக முதுகலை ஆய்வேட்டுத் திட்டப்பாடப் பகுதிக்கு வெ. மாலதி (பதிவு எண்: **P19100506**) செய்துள்ள இவ்வாய்வேடு அவர் கணேசர் கலை அறிவியல் கல்லூரித் தமிழ்த் துறையில் பயின்ற காலத்தில் தன்னியலாகச் செய்யப்பட்டது என்று சான்றளிக்கிறேன்.

இடம்: மேலைச்சிவபுரி

நாள்: 27/03/2021

நெறியாளர்

முனைவர். மா. தமிழ்ச்செல்வி எம்.ஏ., பிஎச்.டி

உதவிப் பேராசிரியா், தமிழ் உயராய்வு மையம

கணேசா் கலை அறிவியல் கல்லூரி

மேலைசசிவபுரி-622403

முதல்வர்

27/3/21

புதல்வா்

கணேசர் கலை அறிவியல் கல்லூ

மேலைச்சிவபுரி

கணேசர் கலை அறிவியல் கல்லூரி, மேலைச்சிவபுரி

தேர்வு மையம் எண்: 010

2020-2021 எம்.பில் திட்டக்கட்டுரைத் தலைப்புகள்

வ.எண்	மாணவர்கள் பெயர்	பதிவு எண்	கட்டுரைத் தலைப்பு	நெறியாளர் பெயர்
1.	இரா.இலக்கியா	2K20FT-22299	சங்க இலக்கியம்	முனைவர்.ம.செல்வராசு
2.	செ.பெரியநாயகி	2K20FT-22300	கவிஞர் மனோ இளங்கோவின் கருப்பர் கோவில் திருவிழா நாவலில் சமுதாயம்	முனைவர் சி.முடியரசன்

Ganesar College of Arts and Science, PG Dept of Commerce
Project Details from 2020 -21

S. NO	NAME	TITLE [2021-2022]	GUIDE	REG.NO
1	M.KAVITHA	STAR HEALTH AND ALLIED INSURANCE COMPANY LIMITED	A.DURAIPANDI	P19110401
2	MATHAN KUMAR	ISSUES AND CHALLENGERS OF JASMIN ENTREPRENURS IN KARIKUDI	S.MANJULA	P191104042
3	P.MANIMEGALAI	A STUDY ON CUSTOMER ATTITUDE AND BEHAVIOUR TOWARDS CADBURYS CHOCOLATE IN PUDUKKOTTAI TOWN	M.MOHAMED IBRAHIM MOOSA	P19110403

HOD ead
Department of Comm...
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403
Dt:

Principal
PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI - 622 403

ISSUES AND CHALLENGES OF JASMINE

ENTREPRENEURS IN KARAIKUDI

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

MASTER OF COMMERCE

2020-2021

Researcher

M.MADHAN KUMAR

Reg.No:P 19110402

Under the Guidance of

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

DEPARTMENT OF COMMERCE

Ganesar College of Arts & Science

Melaisivapuri-622 403

APRIL-2021

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

Assistant Professor,

Department of Commerce & Bank Management,

Ganesar College of Arts & Science,

Melaisivapuri, Pudukkottai District -622 403

CERTIFICATE

This is to certify that the project report entitled **"ISSUES AND CHALLENGES OF JASMINE ENTREPRENEURS IN KARAIKUDI"** by **M.MADHAN KUMAR (Reg.No: P 19110402)** is a work under my guidance and during the academic year 2020-2021

Date: 27·3·2021

Place: Melaisivapuri

Head of the Department

A. DURAI... M.Com., M.Phil., (Ph.D.,)
Head of the Department of Commerce
Ganesar College of Arts and Science
Melaisivapuri, Pudukkottai (Dt.)

Signature of the Guide

Signature of the Principal
27/3/21

Dr.P.MAHENDHRAN,
M.Com.,M.Phil.,B.Ed.,MBA.,Ph.D.,
ASSISTANT PROFESSOR
DEPARTMENT OF COMMERCE
SRI MEENAKSHI VIDIYAL COLLEGE
PALUVANCHI, TRICHY

A STUDY ON CUSTOMERS ATTITUDE AND BEHAVIOUR TOWARDS CADBURYS CHOCOLATE IN PUDUKKOTTAI TOWN

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

MASTER OF COMMERCE

2020-2021

Researcher

P.MANIMEKALAI

Reg.No:P 19110403

Under the Guidance of

Dr.M.MOHAMED IBRAHIM MOOSA M.Com.,M.Phil.,B.Ed.,Ph.D.,

DEPARTMENT OF COMMERCE

Ganesar College of Arts & Science

Melaisivapuri-622 403

APRIL-2021

Dr.M.MOHAMED IBRAHIM MOOSA M.Com.,M.Phil.,B.Ed.,Ph.D.,

Head of the Department of Bank Management

Ganesar College of Arts & Science,

Melaisivapuri, Pudukkottai District -622 403

CERTIFICATE

This is to certify that the project report entitled "A STUDY ON CUSTOMERS ATTITUDE AND BEHAVIOUR TOWARDS CADBURYS CHOCOLATE IN PUDUKKOTTAI TOWN" by **P.MANIMEKALAI** **(Reg.No:P 19110403)** is a work under my guidance and during the academic year 2020-2021

Date:

Place: Melaisivapuri

Head of the Department

Signature of the Guide

Dr. M. MOHAMED IBRAHIM MOOS
Asst. Prof & Head, Dept of Bank Manag
Ganesar college of Arts & Science
Melaisi vapuri 622 403 .

Signature of the

Principal

27/8/21

Dr.P.MAHENDHRAN,
M.Com.,M.Phil.,B.Ed.,MBA.,Ph.D.,
ASSISTANT PROFESSOR
DEPARTMENT OF COMMERCE
SRI MEENAKSHI VIDIYAL COLLEGE
PALUVANCHI, TRICHY.

ISSUES AND CHALLENGES OF JASMINE

ENTREPRENEURS IN KARAIKUDI

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

MASTER OF COMMERCE

2020-2021

Researcher

M.MADHAN KUMAR

Reg.No:P 19110402

Under the Guidance of

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

DEPARTMENT OF COMMERCE

Ganesar College of Arts & Science

Melaisivapuri-622 403

APRIL-2021

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

Assistant Professor,

Department of Commerce & Bank Management,

Ganesar College of Arts & Science,

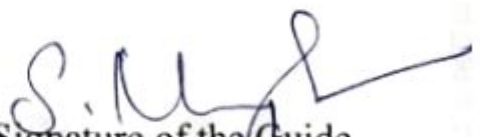Melaisivapuri, Pudukkottai District -622 403

CERTIFICATE

This is to certify that the project report entitled "ISSUES AND CHALLENGES OF JASMINE ENTREPRENEURS IN KARAIKUDI" by M.MADHAN KUMAR (Reg.No: P 19110402) is a work under my guidance and during the academic year 2020-2021

Date: 27.3.2021

Place: Melaisivapuri

Head of the Department

A. DURAIPANDI M.Com., M.Phil., Ph.D.,
Head of the Department Commerce
Ganesar College of Arts and Science
Melaisivapuri, Pudukkottai (Dt.)

Signature of the Guide

Signature of the Principal

PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI - 622 403

Dr.P.MAHENDHRAN,
M.Com.,M.Phil.,B.Ed.,MBA.,Ph.D.,
ASSISTANT PROFESSOR
DEPARTMENT OF COMMERCE
SRI MEENAKSHI VIDIYAL COLLEGE
PALUVANCHI, TRICHY.

Ganesar College of Arts and Science
Dt:
Melaisivapuri-622 403

M.MADHAN KUMAR

Reg.No : P 19110402

Department of Commerce,

Ganesar College of Arts & Science,

Melaisivapuri, Pudukkottai District -622 403.

DECLARATION

I declare that the project work entitled **"ISSUES AND CHALLENGES OF JASMINE ENTREPRENEURS IN KARAIKUDI"** submitted by me for the degree of Master of Commerce to Bharathidasan University Thiruchirapalli is my original work and that it has not previously formed the basis for the award of any degree, diploma, Associateship, fellowship, or any other similar title.

Date: Signature of the Candidate

Place:Melaisivapuri   *m.madhankumar*

                                                                 (M.MADHAN KUMAR)

Signature of the Guide

ACKNOWLEDGEMENT

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

CHAPTER - I

INTRODUCTION AND DESIGN OF THE STUDY

1.1. INTRODUCTION

India is an agricultural country which is endowed with abundant natural resources. It remains the largest employer with about 60 per cent of the population depending either directly or indirectly on agriculture for their livelihood. Due to the higher dependency nature, agricultural growth has direct impact on poverty eradication and it was also felt pertinent that for achieving the goal of the egalitarian society, the development of agriculture to its fullest potential must come to occupy a primary role in the Indian economy. Its development helps in controlling inflation, rising of agricultural wages and increasing employment. It provides immense opportunity for trading activities which extend from wholesaler to retailer. It is more important that in spite of these substantial material gains to the economy, it is a way of life, unique and adds human values however, with the increasing cost of production and due to the major role played by the middlemen; the farmers are not able to get a reasonable price for their products. This affects their standard of living considerably. Floriculture is one of the important components of agricultural activity. This agricultural activity is not an exception to this trend which is expected to result in the same situation of poor remuneration for the product. In the present study it is attempted to examine the Jasmine cultivation and the remuneration from the activity of the sample farmers with an examination of the channels of distribution in the region of Karakudi.

India has a long tradition of floriculture references to flowers and gardens are found in ancient Sanskrit classics like the Rig Veda [3000 – 2000 BC], the Ramayana [C1200–1300 BC], the Mahabharata [prior to 4th century BC], Shudraka [100 BC], Kalidasa [C 400 A.D] and Sarangadhara [C 1200 AD].

Floriculture is a fast emerging and highly competitive industry with the continuous introduction of new cultivars and even new crops. Cultural techniques are changing and hence new products are developing. Ornamental crop culture technology is improving with the availability of equipment and there is a change in the taste of the consumers. A new generation of growers is coming forward to employ

1

modern technology for maximizing production and to offer quality produce for consumer acceptability, thus fetching a better price. It has emerged as a lucrative profession with a much higher potential for returns compared to other agri-horticultural crops. The science and the art of commercial floriculture have been recognized as an economic activity with the potential for generating employment and earning valuable foreign exchange. In several countries of the world, floricultural products are amongst the main export items of agricultural origin. For any country to diversify its agricultural base geared towards export, the ornamental crop industry presents one of the most interesting and viable options. The aesthetic value of flowers and ornamental plants, their use in social events, the overall satisfaction in working with them and their high income-generating power are attracting modern entrepreneurs to invest money in the floriculture industry. There is a continuous demand for flowers and ornamental-plants for different needs like religious and official ceremonies, parties, house decoration, wedding, funerals and so on. The demand for fresh flowers and ornamental plants will increase worldwide over the coming years.

The social and economic aspects of flower growing were however, recognized much later. The offerings and exchange of flowers on all social occasions, in places of worship and their use for adornment of hair by women and for home decoration have become an integral part of human living with changing lifestyles and increased urban affluence, floriculture has assumed a definite commercial status in recent time. Appreciation of the potential of commercial floriculture has resulted in the blossoming of this field into a viable agri-business option. Availability of natural resources like diverse agro-climate conditions permit production of wide range of temperate and tropical flowers. Almost all through the year in some parts of the country or other, improved facilities have increased their availability in every part of the country. The commercial activity of production and marketing of floriculture products is also a source of gainful and quality employment to crores of people.India is the second largest exporter of essential oil in the world after the USA. India's exports of essential oil raised from USD 298.7 million 2007-08 and to USD 329 million during 2008-09. Rose oil (USD 3432 per 500g) commands the highest price in the international essential oil markets.

2

1.3 STATEMENT OF THE PROBLEM

The general characteristics of many agricultural produce are not found in the case of flowers. Flowers are highly perishable, labor-intensive and involve greater risk both in cultivation and marketing. It requires careful handling and speedy disposal. Hence, the market remains localized. Therefore, flower cultivation is necessarily confined to places close to the market in big cities. Cultivation of Jasmine flower is a lucrative business to the farmers and this is an important crop which helps to increase the economic condition of the Jasmine growers. At the same time cultivation of Jasmine is not at all aromatic proposition and marketing of Jasmine remains highly unorganized. Jasmine is marketed through agents in markets. Marketing of Jasmine poses more problems as compared to other agricultural commodities as they have a high degree of perishable, steady decline in price, existence of more number of middlemen and the line. Further, the Jasmine growers are affected by the problems like time of sales, price fluctuation, non-availability of fertile seedlings, high wage rate, and non-availability of labourers, high transport cost, high commission, more maintenance cost and malpractice by the middlemen. On the other hand, inadequate technical know-how and government's apathetic attitude have compounded the problems of cultivation and marketing of this crop. Such factors are not favourable to the farmers but at the same time this situation creates favourable environment to the marketing functionaries.

There is a need to bring improvement in the marketing of flowers. The efforts made by the Government to improve the marketing system could improve the efficiency and held in increasing the producers share in the consumers rupee in the case of food grains and oil seeds to a great extent but very little have been done in the case of flowers for improving the marketing efficiency. The Jasmine marketing is largely confined to provide traders virtually in the grip of a few commission agents. The interest of the Jasmine growers has been grossly neglected causing several financial losses. The middlemen manipulate the situation by offering low price to the growers under the pretext of low demand and false rejection of produce in the name of substandard. Sometimes, the Jasmine flowers also get accumulated in a particular region due to climatic conditions or due to strike by transport owners. Growers then get distressed and get substandard low price in addition to wastage of large quantity of the produce. Thus on the one hand there are various hurdles incarrying out the

floricultural operation smoothly and there are problems in marketing the produce due to the major role played by the intermediaries.

1.7 SCOPE OF THE STUDY

This study confines itself to Karaikudi region only. This region is the one among theregionin Tamilnadu having thelargest Jasmine traders in the state. This study is an attempt to examine the cultivation and marketing of Jasmine. The present study to examines the opinion of the Jasmine entrepreneurs about the existing business issues with the help of the socio-economic factors like age, educational status, size of the family, nature of the family, size of the land-holdings, allocation of land for Jasmine cultivation, experience in Jasmine cultivation and annual income due to Jasmine cultivation. This study also examines the opinion of the Jasmine entrepreneursabout the marketing practices with the help of storage facility, transport problem, channels of distribution, price determination and profitability.

1.8 SIGNIFICANCE OF THE STUDY

Jasmine flower cultivation and marketing help rural poor agriculturists to improve their standard of living. It creates employment opportunity for the poor classes in rural and urban areas. It is found that various hurdles are faced by farmers and middlemen. A single comprehensive study for Jasmine crops covers various aspects such as cultivation practice, cost, net return, marketing efficiency, price spread, marketing problems to the growers and traders. Thus, the study differs from the earlier studies in respect of its scope, nature, contents, and the area covered. The present study is thus significant and it is expected to be useful not only to Jasmine traders in Karaikudi but also in different places. Government policy makers are in better understanding of the present way of Jasmine marketing. The result of the analysis of this study will be useful to the Jasmine traders to minimize the cost and will provide ways to get more profit.

1.9 OBJECTIVES OF THE STUDY

Based on the above issues, the objectives framed for the present study are as follows:

- To identify the role of socio-economic status of the sample Jasmine traders in Karaikudiregion.
- To analyze the pre – production issues of Jasmine Entrepreneurs.

4

- To examine the post – production issues of Jasmine Entrepreneurs.
- To offer suggestions for the betterment of Jasmine trading business.

1.10 HYPOTHESIS FRAMED FOR THE STUDY

- There is no significant difference in opinion among respondents with respect to pre-production issues associated with Raw materials in Jasmine trade business at Karaikudi.

- There is no significant difference in opinion among respondents with respect to pre-production issues associated with financial constraints in Jasmine trade business at Karaikudi.

- There is no significant difference in opinion among respondents with respect to pre-production issues associated with Human resource in Jasmine trade business at Karaikudi.

- There is no significant difference in opinion among respondents with respect to Post-Production issues associated with marketingin Jasmine trade business at Karaikudi.

- There is no significant difference in opinion among respondents with respect to Post-Production issues associated with logistics in Jasmine trade business at Karaikudi.

- There is no significant difference in opinion among respondents with respect to Post-Production issues associated with profitability in Jasmine trade business at Karaikudi.

- There is no significant relationship between pre-production and Post-Production in Jasmine trade business at Karaikudi.

- There is no significant impact of pre-production on Post-Productionin Jasmine trade business at Karaikudi.

1.11. METHODOLOGY OF THE STUDY

1.11.1. Source Of Data

The present study relies both on the primary and secondary data.

1.11.1.1 Secondary Data

To examine the cultivation performance of Jasmine flowers cultivated area, and output of the Jasmine collected at national level, state level and at the district level.

5

This informationwascollected from various secondary sources of data like seasonal crop report published by the horticultural department, government of Tamil Nadu. Handbooks published by the district horticultural offices and the various websites.

1.11.1.2 Primary Data

This study is largely based on the primary data, because, the information relating to the study is extremely scant. Required primary data were collected in the course of interview with the traders through survey method. Collected data were tabulated to make it suitable for further statistical analyses. In conformity with the objectives of the study, a draft schedule was prepared. That draft schedule was pre-tested to eliminate items listed that were irrelevant to local conditions and to include those which seemed missing to endure its adequacy and accordingly the schedule had been changed, modified and re-arranged in consistence with the requirements of the study.

1.11.2. Data Collection Period

For the purpose of study data were collected between the periods of 2019-2020.

1.11.3. Data Collection method

The data were collected using structured questionnaire through structured and unstructured interview with Jasmine traders in Karaikudi.

1.11.4. Sampling Method

As the sample are visible in the Karaikudi region. Snowball Sampling technique was adopted to identify the Jasmine Traders.

1.11.5. Sample Size

Unlike Jasmine manufacturer, trader data are unavailable in Governmental report and other database. Yet, from the survey experience the researcher identified there would be 161-170 Jasmine trader in Karaikudi region, which is a significant number next to the traders, manufacturers in Dindigal, Madurai and Coimbatore District. For the purpose of study the researcher considered 161 samples which is greater than the sample size estimated through raosoft calculator [119-Estimated Sample size]

1.12 STATISTICAL TOOLS USED

- Descriptive Statistics
- ANOVA
- Independent Sample T Test
- Rank Analysis
- Pearson Correlation
- Multiple Regression

1.13. RELIABILITY TEST

Cronbachs Alpha is used as an estimate of the reliability of a psychometric test. It is a measure of internal consistency of the data or variables. It can be viewed as the expected correlation of two tests that measure the same construct. It is a function of the number of items in a test, the average covariance between item-pairs, and the variance of the total score.

Cronbach's Alpha (α) Internal consistency

The theoretical value of alpha varies from zero to 1, since it is the ratio of two variances. However, depending on the estimation procedure used, estimates of alpha can take on any value less than or equal to 1, including negative values, although only positive values make sense. Higher values of alpha are more desirable. Professionals viewed that a reliability of 0.70 or higher is a reasonable threshold coefficient of reliability.

Table 1.1 – Cronbach's Alpha Internal Consistency

Cronbach's Alpha (α)		Internal consistency
≥ 0.9		Excellent
0.9	$\leq \alpha \geq 0.8$	Good
0.8	$\leq \alpha \geq 0.7$	Acceptable
0.7	$\leq \alpha \geq 0.6$	Questionable
0.6	$\leq \alpha \geq 0.5$	Poor
0.5	$\leq \alpha$	Unacceptable

Table 1.2 – Estimated Reliability Statistics

Cronbach's Alpha	N of Items
.944	45

The obtained Cronbachs Alpha coefficient of 0.944 indicates that as per the thumb rule the alpha coefficient is excellent indicating the high reliability of the data.

1.14. LIMITATIONS OF THE STUDY

- This study is confined to Karaikudiregion only. Regional limitations may vary region to region. Hence the findings of this research cannot be applicable to other places of the country.

- Data cannot be collected from the entire population of the cultivators, wholesalers, retailers and commission agents. So that the researcher has selected 158traders under random sampling method.

- The Jasmine Entrepreneurs do not maintain any records relating to cost and returns. Therefore, these particulars are provided by them depending upon their memory level. So there might be some repetition and recall bias. This anomaly is rechecked by the researcher.

1.15. CHAPTERIZATION

1. Chapter- I: deals with introduction, statement of problem, objectives, significance, and scope and research methodology adopted for the study.
2. Chapter- II: Pinpoints the review of literatures pertaining to the topic.
3. Chapter- III: Explains about theoretical information relating to Jasmine entrepreneurs
4. Chapter-IV: Analyses the issues and challenges of Jasmine entrepreneurs
5. Chapter-V: Portrays the findings, suggestions and conclusion of the study.

CHAPTER II

REVIEW OF LITERATURE

CHAPTER – II

REVIEW OF LITERATURES

2.1. INTRODUCTION

This chapter presents a review of literature to identify and understand the implications of the different issues relating to Jasmine cultivation and marketing. A comprehensive review of related past studies helps the researcher to adopt, modify and improve the conceptualization of the framework and provides a link with past approaches. In this regard, a review of some of the studies in the field of present study has been undertaken and presented. For better exposition, the review of literature is discussed into five subdivisions.The first subdivision deals with floriculture in general and the other four categories relating to the cultivation, relating to the cost and returns, relating to marketing, relating to price behavior has been narrowed down to the discussion on Jasmine.

2.2. REVIEWS RELATING TO THE FLORICULTURE IN GENERAL

Anjugam et al. (1997)[1] have assessed the performance of flower crops in comparison with other field crops like paddy, sugarcane, cotton and groundnuts. They concluded that return on flowers is higher than that of other crops.

Debajit Misra and Sudip Ghosh (1992), made a study entitled Export of Floriculture Products: Problems and Prospectsl , which highlighted India's conducive agro-climatic environment to raise flowers, and pointed out that the availability of cheap labour in India could enable it to emerge as a major exporter of floriculture products. They suggested the formation of co-operative organizations by the farmers for the harvest handling of flowers so as to realize the economics of scale.

Redd (1997)[3] has pointed out that the Karnataka Hydro Industries Corporation Ltd (KHIC} actively participated in the overall development of floriculture industry in Karnataka. Floriculture division of KHIC provides its consultancy services like conception, design and execution in flower production and post–harvest operations. The world consumption is estimated to be about \$50 billion worth of products at retail level. The demand for cut flower is, however increasing in the developed countries. In the Europeon markets cut flowers are regularly imported to supplement the international production. The Netherlands, the world's top flower exporter, supplies more than 1, 70,000 ton of flowers to Germany.

9

Pathania et al. (1998)[4] had highlighted the growing international floriculture market. The authors had tried to assess India's export potential of floriculture products and identified the barriers for the development of this sector in India. It had also recommended some measures to increase export of floricultural products.

Rathinam (1998)[5] has made a study on problems and prospects of floriculture industry in India. This study stressed on problems like inadequate assistance from Government. Further it is suggested that growers should be given adequate training in floriculture and financial assistance should also be provided in the form of soft loan for both production and marketing.

Garg and Sharma(1999)[6] have analyzed the technological constraints in floriculture farming. In this regard they have collected the required data from 37 flower growers from Luthiana, Hoshipur district. The study found that flower growers are affected by the problems like incidence of insects, pests, non-availability of planting seeds, non-availability of skilled labour and lack of training facilities.

Ashok and Vijayakumar (1999)[7] estimated India's export potential of cut flowers. The authors had discussed the difficulties of floriculture and had debated the measures taken by the Government and other institutions to accelerate commercial flower cultivation.

Bhat (2000)[8] had written two articles entitled - Floriculture in India. In the first article he had explained the ups and downs of the floriculture industry in India since 1990. In the second article he had dealt on the erection of Greenhouses, hurdles for floriculture development and the future policy measures of Government.

Irulappan (2000)[10] pointed out that the area under flower crops in India has almost doubled from 37,987 hectares in 1992 – 93 to 73,536 hectares in 1997- 98. There is a great demand for traditional flowers in the domestic market increase in population, growing habit of flower use, uplift in economic conditions and inherent love for flowers have contributed to the growth of this industry. There is a good potential for the export of traditional flowers to meet the demands of the ethnic population in different countries.

Kumar (2000)[11] had evaluated that floriculture business is profitable. According to this author income from per unit area was high, provided quality is maintained. The author had also highlighted infrastructure deficiencies and financing of floriculture projects by National Horticultural Board.

Rahava and Dadlani (2000)[13] have pointed out the growing domestic market of flowers. A study of the Delhi market in 1995 estimated a trade of more than Rs. 50 crore annually. This has increased many times during the last 4 to 5 years, which has seen a major growth in business as evidenced by the florist shops in every locality in Delhi. A similar situation exists in all other major cities in the country. The greenhouse produce has also led to appreciation of quality flowers for obtaining better prices.

Ramakrishnappa (2000)[14] highlighted domestic demand and supply of flower products and market channels in Karnataka. His report identified three market channels for traditional flower crops in Karnataka. They are 1. Producer – Commission Agent – Wholesaler – Retailers – Consumer. 2. Producer – Pre-harvest Contractor -- Commission Agent – Wholesaler – Retailer –Consumer. 3. Producer – Commission Agent for wholesaler (primary Market) – Commission Agent (Secondary Market) – Retailers - Consumers.

Panekar and Swant (2001)[15] have analyzed the problems of flower growers in three aspects such as economic constraint (high cost of planting material, fertilizer and transport) technical constraint (disease, inadequate knowledge of improved variety) and financial constraints (loan problem)

Arumugam and Others (2002)[17] have analyzed the ways to promote floriculture industry in India. They had identified different segments such as traditional flowers, cut flowers, dry flowers, cut foliage, pot foliage plants, pot flowering plants, tissue culture plants, seeds and bulbs, floral oils and other floriculture products to encourage this sector. This had great demand in domestic market as well as foreign market. They also emphasized post-harvest technologies and export-oriented politics to advance this sector.

Dhillion et al. (2003)[18] have selected three districts and one block from each district on the basis of the area of flower production from each selected district. From each block the list of villages were prepared to find where flower production is adopted. From these villages 120 growers were randomly selected. This consisted of 65 small, 42 marginal and 13 large growers. This study revealed that flowers were grown in 1,850 hectares during 1996 -97 which increased to 2,250 hectares in 1999 -2000. According to their findings, Hariyana flower production has emerged as one of the most lucrative businesses due to other horticultural crops.

2.3. REVIEWS RELATING TO THE COST AND RETURNS OF JASMINE

Alagumani and Anjugam (1998)[19] in their study found that flower crops do not require a huge investment. But returns were realised from the first year onwards. Since the Net Present Value (NPV) from the all flower crops are high, the Internal Rate of Return (IRR) is found to be more than 50 percentage which indicated the high profitable nature of flower crops. It is found that the average annual cost per hectare is the highest in rose followed by Kakarata Jasmine, Crossandra. The average annual return per hectare was found to be the highest in Kakarata followed by Rose, Crossandra and Jasmine.

The agriculture editorial Board of Dinamalar (a Tamil Daily 1998)[20] has reported that there was a possibility to get 4,000 kg of Jasmine per acre per annum. According to the report the cost of cultivation of Jasmine per acre was Rs.7,000, for plucking (labour) Rs.20,000 and unexpected expenses Rs.300.

Gajanna and Subramanyam (1999)[21] have made a study in Kerala and they identified that transport cost (73 Percent) and packing cost (27 Percent) are the major components of marketing cost. They suggested that the frequency of air cargo to the study area was to be increased and the air freight to be reduced.

Guledgudda and Hosamani (1999)[22] have calculated the cost and returns by estimating the effective lifespan of four years and they found that establishment cost of Jasmine cultivation per acre was Rs.8,346 in which major proportion was labour followed by plant cuttings. The total costs per acre is Rs.47,370 of which variable cost constituted 65 Percent (Rs.30,792), fixed cost 9.67 Percent (Rs.4,580) and marketing cost 25.33 Percent (Rs.11,998). The average net returns per year in Jasmine

cultivation over variable costs are Rs.52,303 and Rs.47,724 over fixed cost while net returns over marketing cost are Rs.35,726.

Gangaiah (2001) [23] has found that the average cost of production of flowers [Jasmine], rose, and crossandra per acre worked out to be as Rs.1,01,657.63 and the total selling value of the flowers was estimated at Rs 1,38,868.27. The researcher felt that production of flowers was more profitable than that of a new crop.

Ramesh (2003) [24] has analyzed the cost of Kakarata Cultivation. He found that the farmers had to spend Rs 80,000 per acre [planting + labour Rs.10000, plucking Rs.50000, fertilizer, pesticide and maintenance Rs.20000] for Kakarata cultivation. When this cost for the production of Kakarata (a variety Jasmine) spent, it gives a yield of Rs.1,75,000 per acre. Further he stated that production of Kakarata is more profitable.

Rakeshkumar et al. (2004) [25] conducted a study on the marketing of marigold, rose and Jasmine in U.P. They identified that the total marketing cost incurred by the producer was Rs 0.96, Rs 2.20 and Rs 1.47 per kg of marigold, rose and Jasmine respectively, whereas the cost incurred by the retailers in marketing of marigold, rose and Jasmine was Rs 0.69, Rs 1.19 and Rs 1.08 per kg respectively.

Dr .S.Balraj (2018), [26] has examined the returns of Jasmine flowers over a period of 12 months. The farmer gets a yield of 40 tonnes of Jasmine flowers at an average price of Rs.70 per kg. This gives him Rs.28 lakh. The farmer gets a net profit of Rs.8 lakh from his 15 acre farm.

Ingle et al (2009) [27] the study was carried out to evaluate the production cost of Jasmine flowers in Nanded district of Maharashtra in the year 2005-06. Results revealed that overall production cost worked out to be Rs 1,83,021.94. Component-wise rental value of land accounted for the highest share at 30.55 Percent in total, cost followed by hired human labour 25.14 Percent, amortized cost 13.13 Percent, family human labour 11.32 Percent, irrigation 6.35 Percent, fertilizers 2.20 Percent, bullock labours 1.61 Percent and plant protection 0.73 Percent. In the case of per hectare profitability in Jasmine flower production, the net profit from Jasmine flower production was Rs 1,52,791.39 per hectare and output-input ratio was 1: 1.87.

Perke et al. (2009)[28] Nanded district is purposely selected on the basis of highest area under floriculture. It is about 180 hectares. Multi-stage sampling design has been used for selection of district, tehsil, villages and flower growers. On the basis of high area under flower crops, 10 villages were selected. From 10 selected villages sample size of 30 kagda (kakarata) growers were selected for the present study. The information collected on the aspect of cost, return and profitability were analyzed in tabular form by using statistical tools. Data pertained to the year 1999-2000. The result revealed that use of hired human labour and family labour was 896.39 mandays and 143.19 mandays per hectare respectively. The output-input ratio at cost was 1: 1.35 per hectare.

2.4. REVIEWS RELATING TO THE MARKETING OF JASMINE

Pawn (1997)[29] has undertaken a study to analyse the present marketing pattern and price spread of floriculture. By using sampling method, Rai block of Hariyana was selected. The required data were collected from 47 growers, 5 commission agents and 7 retailers. It is found that flower cultivation was comparatively more profitable (net return of Rs 20,295 per hectare) than other crops like paddy, sugar cane and wheat. The study further revealed that the most important marketing channel adopted by the sample growers was Producer -Commission Agent - Retailers - Consumers (more than 50 percentages of sample growers was marketed through this channel). But producers share in Consumers rupee is higher than in Producer - Retailers - Commission Agents channel.

Raghava and Dadlani (1997)[30] have found that marketing of flowers was disorganised. Flowers were brought to wholesale markets using unscientific methods of packing. They also found that major constraints for floriculture were the cost and availability of finance.

Vedini (1997)[31] has examined the cost and margin in Jasmine flower marketing. This study was conducted in Mysore district of Karnataka. From the villages the respondents are selected randomly. Apart from this, market intermediaries like commission agents and retailers were selected randomly from important markets. This study found that there were two channels for marketing of Jasmine like producer – traders/ commission agents - retailers, and producers - consumers. It is observed that all the Jasmine growers sold most of their produce through the commission agents.

This analysis of the cost structure of the producer shows that farmers pay high commission. The analyses of cost structure of traders – cum -commission agents showed that about 94 percentages of the total marketing cost accounted for labour charges. The price spread of Jasmine flower had shown that the margin and cost were higher at retailers level because the flowers were converted into garlands, dry flowers etc. It is found that price – spread in the commission agents channel was 49 percentages.

Pathania et al. (1998)[32] have analysed the - promising trade abroadl on floriculture industry in India. International trade in floriculture product is gaining significance over the years. The trade is expanding about 15 percentage per year offering enormous opportunities to countries with diversity of climate and native species.

Verma et al. (1998) [33] have examined the impact of the sale of flowers through channel of producers - commission agents - consumers. They found that producers share was merely 31.27 Percent and florist's margin was high due to the creation of farm utility.

Gajanna and Subramaniyam (1999)[34] have made another study in Karnataka regarding marketing of cut flowers. In this study, they found that transportation was the major marketing problem followed by wide fluctuation prices. They suggested that institutional financing agencies should advance liberal credit for gladiolus production and marketing, so that the production might not depend on the contractors for advance payment for growing of the crop.

Guledagu et al. (1999) [35] have found that the scope for exploitation for middlemen in Jasmine flower trade was higher due to perishable. They identified two channels in marketing of Jasmine in the study area. Sales through Commission Agents cum wholesalers attracted more number of farmers. Further they found that transportation and spoilage loss were the major cost components in the marketing cost. This study also identified that growers received 62 perentage of the consumers price and the village traders enjoyed maximum profit. It was suggested that Government intervention in marketing of Jasmine is the growers long-felt need.

Reddy (1999)[36] has highlighted that marketing of flowers in India was not well organized. Most flowers are marketed through wholesalers with or without brokers and commission agents as intermediaries. He viewed that the systems should be

developed which would help the growers to protect them from intermediaries' exploitation.

Patil and Patil (2002)[37] have identified that 99 Percent of the flower growers sold their flowers through wholesalers and retailers. They also they found that commission charges occupy the prime position in total cost incurred for disposal of flowers.

Perumal (2002)[38] has found that flower marketing efficiency developed with the increase in the number of intermediaries. He suggested that flower growers should be encouraged with timely supply of inputs and credit for better performance.

Jyothi and Raju (2003)[39] conducted a study on marketing of Crossandra, Jasmine and Rose flowers in East Godavari district of Andhra Pradesh. They identified that the marketing cost incurred by the producer was Rs 13.50, Rs 19.50 and Rs 9.00 per basket of Crossandra, Jasmine and Rose respectively. whereas the cost incurred by the retailers in marketing of crossandra, Jasmine and rose were Rs 11.50, Rs 12.50 and Rs 7.50 per basket respectively.

Ahmed (2004)[40] has narrated that the flower auction centre of South Indian Floriculture Association (SIFA) with 36 registered members had a total of 120 hectares of areas under flowers production. SIFA is trying to establish itself in Bangalore with the help of Karnataka State Government. The centre would well organize an avenue for sale and distribution of flowers and is likely to attract buyers from all over the country as well as peripheral foreign buyers. They are also involved in finding new markets for Indian flowers.

Natarajan and Malarkodi (2005)[41] have observed world horticulture trade and industry. Horticulture is a fast emerging venture in the world trade. Gardeners_ profession is fast becoming an important commercial venture. In world trade, Indian floriculture industry has unprecedented growth with increasing acceptability. Nowadays floriculture is gaining importance in the export market owing to the demand for cut flowers and seeds.

Nagarajan (2006) [42]in his article entitled —The fragrant Madurai Gundumallil endorsed on the amount of labour invested in the cultivation of this flower crop. To realize better market price the farmers had to leave the farm with produce early in the morning. Considering the problems and dangers associated with the Jasmine flower

harvesting during early morning time, it is suggested to evolve the suitable mechanism to minimize the hard ship experienced by the women labour.

Selvaraj and Rayappan (2006)[43] have examined the marketing pattern and efficiency of various channels in Jasmine marketing. The intermediaries play a dominant role realizing the importance of marketing. He has focused on the selection of channel, marketing cost, marketing margin of different intermediaries, marketing efficiency and price–spread of indentified 3 channels in Jasmine marketing.

Shankar (2007)[44] This study was made in selected cities in north Karnataka like Dharwad, Belgaum, Bellary and Gulbarga. Multi-stage random sampling was followed for selection of florists in the study area. 30 retail florists from each city were selected randomly and the total sample size selected for the study was 80. The results revealed that florists in Belgaum were found to procure highest number of parcels per week to the extent of 4.40 parcels followed by Gulbarga 3.5 parcels, Dharawad 3.2 parcels and lastly Bellary 3 parcels. All the respondents procured cut flowers through the wholesalers. The florists also procured cut flowers from the local markets depending upon the availability in different months. The florists obtained more returns by the sale of bouquets than other floral products. The raw material cost was found to be highest followed by inventory and maintenance cost, packaging material, rent, promotional cost and other fixed costs. The florists sold the floral products mostly to the families rather than other customers. The period between December to May was found to have high demand for floral products price fluctuation in market and quick deterioration in quality were found to be the major problem in procurement of cut flowers for florists.

Panwar and Kumar (2008) [45]Floriculture in India is being viewed as a high growth industry. Commercial floriculture is becoming important from the export angle. The liberalization of industrial and trade policies have paved the way for development of export-oriented production of cut flowers. The total business of floriculture products in India during 2005 was Rs 8,174 lakh while it increased to Rs 10,117 lakh by April 2006. In India, flower production of West Bengal registered the highest compound growth rate of 16.61 per cent followed by Andhra Pradesh 13.74 per cent and Maharashtra 9.11 per cent. The growing demands of flowers in the domestic as well

as the export market will require a concentrated effort on the part of the government as well as private entrepreneurs to develop floriculture on scientific lines.

Perke et al. (2010)[46] Nanded district was selected for the study to determine consumers preference for flowers. Data were collected from 45 randomly selected consumers with the help of pretested schedule by personal interview method. Data pertained to the year 1999-2000. The method of maximum similarity measures of cluster analysis was used to analyse the opinion scores given by flower consumers. Opinion scores of the flower consumers were obtained on fifteen variables. It was observed that flower consumers opined to use flowers in tobacco products as well as in the pharmaceutical industry which indicated the similarity value of 0.750 followed by usage of flower in gulkand with similarity value of 0.705. This aggregate cluster was named as a dimension of industrial usage. Similarly, it was seen that similarity measures in the above cluster were dimension of personal usage and dimension of social usage.

Kaur and Saleem (2011)[47] An attempt is made to study the area under cultivation of modern flowers. It includes states like Karnataka, Maharashtra, and Delhi. The research paper also studies the export-import of modern flowers with the countries like Japan, The United Arab Emirates, Italy, Canada and Australia. It is taken from APEDA (Agricultural and Processed Food products Export Development Authority). Statistical tools like graphs are used in this research paper for the data interpretation.

Karuppusamy et al. (2012)[48] This study aimed to analyze the different marketing channels and price spread of Jasmine in Sathyamangalam market in Erode district. Primary data were collected from 50 Jasmine farmers, 10 Commission Agents, 10 Wholesalers, 10 Retailers and 30 Consumers through the direct interview method. The collected data were analyzed by using percentage analysis. The results revealed that among the six marketing channels identified, Channel fifth has lower price spread of Rs 53.02 and higher marketing efficiency of Rs 12.13 because of involvement of less number of middlemen.

2.5. REVIEWS RELATING TO PRICE BEHAVIOR

Guledagudda (1999) assessed the production and marketing of Jasmine in Darawad district, Karnataka. A total of 120 Jasmine growing farmers were selected from Gadag and Mundaragi taluks of Dharawad district to collect the primary data. The tabular analysis was used to compute costs and returns. The average total cost of cultivation worked out to be Rs 47,370.12 per acre, which consisted of variable costs (Rs 11,998.42). The returns over variable, fixed and marketing costs computed to Rs 52,303.91, and Rs 47,724.23 respectively revealing the profitability of Jasmine cultivation. The producers on an average incurred the marketing costs of Rs 421.45 and Rs 455.58 per quintal in Gadag and Hubli markets respectively.

Varatharajan and Ravindran (1997) have observed the peculiar characteristics of flower business. Flowers are highly perishable and require careful and speedy disposal. Therefore, flower cultivation should be necessarily at places close to the markets. In big cities, location apart from perishablity makes flower trade complex and risky.

Ghose (1998) has observed that the percentage of margin of the wholesaler and the retailers was not high in the flower business. To boost up floriculture in Orissa, it was suggested that high quality export-oriented floriculture be developed and alteration made for channellising private and institutional finance for floriculture in Orissa.

A Tamil Magazine "NaveenaVelanmai" [Modern farming] 80 (1998) viewed that flower price is determined on the basis of daily arrival, festivals and quality. This article revealed that the flower business was offering jobs to a number of poor women. Flower sales were busy during April – July and November – December. Flowers fetch high price between 4.a.m. and 1.p.m. It is suggested that banks must come forward to external financial assistance and Government had to provide storage facilities.

Floriculture Today (1999) has analyzed the flower trade structure in western markets. It is found that the absence of strong supermarket sector accounts for the continued presence of many florists in Germany. In general, price at terminal wholesale market fluctuates less than price at German auctions. Indeed, most of the flowers sold by street vendors were pre –priced with no negotiation of price possible other than with the large buyer.

Ali and Banergee (2000) have conducted a study with objectives to analyze the fluctuation in monthly prices of Bala flower [JasminumSmbac] in West Bengal. To examine price fluctuation of one primary wholesale market [mullickhar] two retailer markets had been selected. Regarding the price fluctuation, they found that average maximum wholesale price was realized in the months of June to August, whereas the minimum wholesale price was realized during the months of April – May. The producers reap about 60 parentage and 30 percentage of the consumers rupee at maximum and minimum price levels respectively.

2.6. RESEARCH GAP

The various reviews of literature were collected through the existing records like national and international journals, books and websites. Previous researchers have attempted to find solutions to the existing problems. Based on these problems, this research has been processed and it tries to give suitable solution to the current problems in the Karaikudi region. Also, the researcher couldn't find a single study conducted on current topic having Karaikudi as Study area.

REFERENCES

1. Alagumani, T.M. Anjugam and R. Rajesh (1997). Performance of Flower Crops vis-à-vis Field Crops in Madurai District, Tamil Nadu. Indian Journal of Agricultural Economics, 52(3): 620-21.
   Pathania V, Syal N, Hundal MK, Khanduja KL. Geriforte stimulates antioxidant defense system. Indian Journal of Experimental Biology. 1998 Apr;36(4):414-417.

2. Kathryn M. Chu, R. Rathinam, P. Namperumalsamy, Deborah Dean (1998), Identification of Leptospira Species in the Pathogenesis of Uveitis and Determination of Clinical Ocular Characteristics in South India, The Journal of Infectious Diseases, Volume 177, Issue 5, May 1998, Pages 1314–1321, https://doi.org/10.1086/515273

3. B.S.Garg, R.K.Sharma, N.Bhojak, S.Mittal (1999), Chelating Resins and Their Applications in the Analysis of Trace Metal Ions,Microchemical JournalVolume 61, Issue 2, February 1999, Pages 94-114, https://doi.org/10.1006/mchj.1998.1681

4. Ashok and Vijayakumar (2000), Dry flowers - A profitable floriculture industry. Kisan World, 1999

5. Kumar (2000) Marketing Research-4th edition, 2000, John Wiley and Sons

6. Rahava and Dadlani (2000)., American International Journal of Research in Humanities, Arts and Social Sciences, 6(3), March-May, 2014, pp. 279- 285

7. Irulappan (2000) Variations in seedling populations of annual moringa (Moringa pterygosperma Gaertn.).CAB Direct, Vol.37 No.5 pp.301-302ISSN : 0038-3473

8. C.Ramesha, .Kashinathamb, T.C.McMorrisb (2003), Pseudoguaianolides from the flowers of Parthenium hysterophorus,Phytochemistry, Volume 64, Issue 4, October 2003, Pages 841-844

9. Alagumani, T.M. Anjugam and R. Rajesh (1997). Performance of Flower Crops vis-à-vis Field Crops in Madurai District, Tamil Nadu. Indian Journal of Agricultural Economics, 52(3): 620-21.

10. Debajit Misra and Sudip Ghosh (1992), Growth and export status of Indian floriculture: A review,Agricultural Reviews, 37 (1) 2016 : 77-80,Print ISSN:0253-1496 / Online ISSN:0976-0539

11. Dr .S.Balraj (2018), An economic analysis of jasmine cultivation in Mandapam

12. Block, Ramanathapuram district, Research Directions, Vol: 6 Issue: 5, November 2018,ISSN NO – 2321-5488

13. Ingle A., Varma A., Rai M. (2009) Trichothecenes as Toxin and Bioweapons: Prevention and Control. In: Rai M., Varma A. (eds) Mycotoxins in Food, Feed and Bioweapons. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-00725-5_17

14. Bhat, K.M., van Beers, E.H., Bhat, P. (2000). Sloppy paired acts as the downstream target of Wingless in the Drosophila CNS and interaction between sloppy paired and gooseberry inhibits sloppy paired during neurogenesis. Development 127(3): 655--665.

15. Rakesh Kumar,B. C. Deka,Manoj Kumar &S. V. Ngachan J (2004), Productivity, Quality and Soil Health as Influenced by Organic, Inorganic and Biofertilizer on Field Pea in Eastern Himalaya, Journal of Plant Nutrition, Volume 38, 2004 - Issue 13.

16. Ashok Dhillion, R.K.Khattar and sub singh (2003). Areas and production of Manor flowers grown in Haryana, Agriculture situation in India Vol.LX, (2), 93-94.

17. Ambika, T. (2012). Jasmine: Fit for small growers, Market Survey, June vol.32(9),19-20.

18. Ananya Sahu (2011). Growth of floriculture and its role in promoting socio-economic status of floriculturists of Panskura and Kolaghat blocks, Purba Medinipur, Indian Journal of Geography & Environment 4-12.

19. Aswini Dutt, R. (2011). The rationale behind wearing strings of Jasmine flower by the lactating South Indian women, Iranian Journal of Medical Hypotheses and Ideas, 1-4.

20. Chengappa, P.G. (1980) An analysis of Indian coffee prices - A Spectral approach. Unpublished M.Sc.(Agri) Thesis, IARI, New Delhi.

21. Ev Murray (2006). Export opportunities for Indian floriculture, Cab Calling January – March 50-55.

22. Karuppusamy, R. (2012). Study on marketing and price spread of Jasmine in Erode district of Tamil Nadu, Golden Research Thoughts 2(4), 1- 6.

23. Lanciotti, C.(1990). Forecasts of monthly prices for a group of dairy products – An application of the Box-Jenkins techniques, Rivista-diEconomics-Agraria. 45(3) 465-492.

24. Mastny, V. (2001). The use of Box-Jenkins methodology to predict the price development of agricultural commodities, Acta Unierisatatis Agriculturae et Silviculturae- Mendelianae Brunensis, 49(2) 165-172.

25. Mathivanan, B. (2013). a study on rose cultivation and marketing pattern in Hosur taluk, Journal of Exclusive Management Science –2 (12) 2277 – 5684.

26. Nageshwar Rao and Behra (2001). Busines Line Coimbatore 13th March,13.

27. Nagagowda.V and Narayana Gowda.J.V, (1990) Effect of cycocel and mallic hydroxide spray on flowering and seasonal pattern of yield in gundumalli, Indian perfumer, 34, 273-246.

28. Raghava, S.P.S.(1996). The Hindu survey of India agriculture 103-105.

29. Raghava S.P.S. and Dadlani.N.K. (2000),The Hindu survey of India agriculture, 152.

30. Singh, B.K. (2010) "Adoption of commercial cut flower production technology in Meerut", Indian Res. J. Ext. Edu. 10 (1), January, PP. 50-53.

31. Sudhagar.S (2013). Production and marketing of cut flower (Rose and Gerbera) in Hosur taluk, International Journal of Business and Management Invention 2 (5) 15- 5.

32. Vandhana, M. (2013). Geographical indication tag for Madurai malli, The Hindu January 18.

33. Yin Runsheng and Min, R.S. (1999). Forecasting short-term timber prices with Univariate

34. ARIMA model. J. Ame.Statis.Assoc. 25(1)154-158.

CHAPTER III

THEORETICAL FRAME WORK

THEORETICAL FRAMEWORK

3.1. introduction

Floriculture industry consists of the florist trade, nursery plants, potted plants (including house plants) and bulbs, seed production, micro-propagation (tissue culture) material and extraction of essential oils from flowers. Flowers like Jasmine, Chrysanthemum, Crossandra, Marigold, Rose and so on. are used in religious and social events. These traditional flowers are grown in large area on commercial basis. With the multiple use of flowers particularly Jasmine, there has been an increasing demand for this flower. As a result of this farmers can expect reasonable revenue and profit for their produce. Cultivation of Jasmine is also expected to grow. In the present chapter it is attempted to examine the growth in the cultivated area, output and yield of Jasmine at the national level, state level and the study region.

3.2. INDIAN SCENARIO

India is blessed with diverse agro-climatic conditions across the different regions of the country. A wide range of climatic and edaphic conditions in the Indian subcontinent ensure that it is ideally suited to produce almost all the ornamental crops throughout the year. Cut flowers and ornamental plants play an important role in the floriculture industry. In many advanced countries, ornamentals are the major exportable crops. In our country, the demand and supply of ornamental commodities will increase tremendously in the near future. Continuous efforts are being made in ornamental crop research during the last five decades which has generated awareness in the recent advances made by the universities and research institutes in this direction.

Generally, floriculture is recognized as a lucrative profession. The demand for flowers in the world market is growing at around 15 per cent each year. The floriculture industry in India comprises the florist trade, nursery plants, potted plants (including house plants), bulb and seed production, micro-propagation (tissue culture) material and extraction of essential oils from flowers. In India, modern flowers like Gladiolus, Chrysanthemum, Carnation, Gerbra, Anthurium, Tube rose and Orchids are cultivated. The traditional flowers include Jasmine, Chrysanthemum, Crossandra, Marigold and Rose are grown in 1.16 lakh hectares (National Horicutural Board 2004

24

- 05), out of which 45000 hectares are under the cultivation of ornamental plants. These traditional flowers are grown on large acres of land, on a commercial scale (outdoor) for loose flower production. Modern cut flowers basically used in floral arrangements.

Flower industry is emerging as a blooming business not only in India but also in other countries. After liberalization, the government of India identified floriculture as a sunrise industry and accorded it 100 per cent Export Oriented Status (EOS). In the flower industry, cut flowers assume a prominent place in respect of consumer demand. Cut flowers are mainly used for preparing bouquets.

The domestic floriculture industry has been witnessing an unprecedented growth during the past few years and has also been getting increased acceptability in world markets. Export of floriculture products were valued at Rs 700 million (Shipra Sing 2005). The floriculture industry has been growing at an annual rate of 17 per cent and as a result of which the number of corporate houses entering in the flower business has been increasing during the past five years.In India, the production of flowers is estimated at 5, 35,000 metric tons of loose flowers and 2,570 metric ton of cut flowers.

3.3. MAJOR AREAS FOR FLOWER CULTIVATION IN INDIA

India's geographical conditions determine the agriculture crops production. Weather condition and rainfall are also equally important factors that influence the agriculture production. All the agricultural crops could not be grown in all the areas as they are season-based crops and as indicated earlier the climatic conditions vary widely across the country. Jasmine plays a major role in the world market scenario also. India is cultivating all varieties flowers. Major flowers production areas are Bangalore, Delhi, U.P., Calcutta, Tamil Nadu, Punjab, Trivandrum, Pune and Nasik, Maharashtra, Patna, Muzaffarpur, Srinagar and Sloan.

3.4. JASMINE CULTIVATED AREA

In India

The area under Jasmine cultivation in India stood at 14 483 hectares in the year 1996-97 and in the year 2014-15 it increased to reach a level of 25718 hectares indicating a 3.39 per cent linear and 3.83 per cent compound growth rate. The coefficient of variation, a measure of volatility has been registered at 22.68 showing only a

25

moderate volatility. The average level of area under Jasmine for the entire study period stood at 21947.47 hectares. To understand the year-wise change in the area, the highest annual increase in the year 2006-07 with 15.21 per cent, while the least growth was experienced with a negative growth of 10.79 per cent in 2001-02.

In Tamil Nadu

The area under Jasmine cultivation in the state stood at 4936 hectares in the year 1996-97 and in the year 2014-15 it increased to reach a level of 14732 hectares indicating a 5.20 per cent linear and 5.14 per cent compound growth rate. These growth rates are higher than the All India level. The coefficient of variation, a measure of volatility has been registered at 35.20 per cent showing only a moderate volatility. The average level of area under Jasmine for the entire study period stood at 8478.79 hectares. To understand the year-wise change in the area, the highest annual increase in the year 2010-11 with an increase of 60.31 per cent, while the least growth was experienced with a negative growth of 27.79 per cent in 2007-08.

3.5. JASMINE PRODUCTION / OUTPUT

Jasmine is cultivated in the selected states of India. Its production is influenced by various factors. This agriculture produce has permanent demand and seasonal supply.

In India

The output of Jasmine at the all India level stood at 93636 tons in the year 1996-97 and in the year 2014-15 it increased to reach a level of 281279 tons indicating a 5.78 per cent linear and 6.29 per cent compound growth rates. The coefficient of variation, a measure of volatility has been registered at 34.72. The average level of output for the entire study period stood at 175903 tons. To understand the year-wise change in the output, the highest annual increase in the output was experienced in the year 2004-05 with an increase of 38.74 per cent, while the least growth was experienced with a negative growth of 36.79 per cent in 2003-04.

In Tamil Nadu

The output of Jasmine cultivation in the state of Tamil Nadu stood at 38320 tons in the year 1996-97 and in the year 2014-15 it increased to reach a level of 84448 tons indicating a 2.59 per cent linear and 2.81 per cent compound growth rates. These growth rates are just half of the growth rates registered in the case of increase in

26

output at the all India level. This indicates the poor performance in output in the state of Tamil Nadu. The coefficient of variation, a measure of volatility has been registered at 23 Percent which is lower than the volatility in the output registered in the case of the state of Tamil Nadu. The average level of output of Jasmine for the entire study period stood at 61895.32 tons.

3.6. YIELD OF JASMINE

In India

The yield of Jasmine at the all India level stood at 6465.24 kilo grams. per hectare in the year 1996-97 and in the year 2014-15 it increased to reach a level of 10937 kilo grams per hectare indicating a 2.34 per cent linear and 2.37 per cent compound growth rates. The coefficient of variation, a measure of volatility has been registered at 19.18 per cent. The average level of yield of Jasmine for the entire study period stood at 7864.22 kilo grams per hectare. To understand the year-wise change in the level of yield, the annual average increase worked out shows that the highest annual increase in the yield level was experienced in the year 2001-02 with an increase of 52.22 per cent, while the least growth was experienced with a negative value of 35.33 per cent in 2003-04.

In Tamil Nadu

The yield of jasmine at the state level stood at 7763.37 kgms. per hectare in the year 1996-97 and in the year 2014-15 it has actually declined to reach a level of 5732.28 kgms per hectare indicating a decline of 2.06 per cent linear and 2.22 per cent compound growth rates. The growth rates registered in the case of the Tamil Nadu level lower than the all India level, the yield has experienced an increase while in the case of the state of Tamil Naduthe yield has experienced a decline. This indicates the poor performance of the state when compared to the performance in yield at the all India level. The coefficient of variation, a measure of volatility has been registered at 18.15 which is slightly lower than the volatility registered in the case of India. The average level of output of jasmine for the entire study period stood at 7614.08 Kgms per hectare which is again far lower than the yield of jasmine at the national level. To understand the year wise change in the level of output, the annual average increase worked out shows that the highest annual increase in the yield was experienced in the

year 2011-12 with an increase of 39.92 per cent, while the least growth was experienced with a negative value of 38.02 per cent in 2010-11.

3.8. CONCLUSION

Jasmine cultivation plays a very important role in India, in the state and in the study area. An examination of the trends in the area, output and yield of Jasmine indicated that in the case of cultivated area in Tamil Nadu it is positively higher as compared to other states in India; especially the Study on Sivaganga district has significant impact as there exists many Jasmine traders in selected district. The output of the Jasmine at the all India level is positively higher than the other states in India; especially the Study on Sivaganga district has significant impact as there exists many Jasmine traders in selected district.

CHAPTER IV

ANALYSIS OF THE OPINION OF THE JASMINE ENTREPRENEURS

ANALYSIS OF THE OPINION OF THE JASMINE ENTERPRENEUR

4.1. INTRODUCTION

In this analysis and interpretation chapter the researcher had made an attempt to test the hypothesis framed as per objectives of the study using the data collected from the samples. This chapter has been segregated into seven sections namely;

- Section-A: Demographic profile of the respondents
- Section-B: Objective 2: To examine pre-production issues associated with Raw materials, financial constraints and Human resource in Jasmine trade business in Karaikudi.
- Section-C: Objective 3: To analyze the Post-Production issues associated with marketing, logistics, and profitability in Jasmine trade business in Karaikudi.
- Section-D: Objective 3: To estimate inter-relationship between pre-production, and Post-Production variables using a model.

SECTION - A

4.2. Demographic Profile

Herein percentage analysis was carried out to classify the demographic profile of the respondents with respect to various categories.

Table No. 4.1: Demographic Profile of the Respondents

Demographic Profile	Option	Frequency	Percent
Gender	Male	157	97.5
	Female	4	2.5
	Total	161	100.0
Age	Below 25	5	3.1
	25-35	12	7.5
	35-45	96	59.6
	45-55	31	19.3
	Above 55	17	10.6
	Total	161	100.0
Marital Status	Married	148	91.9
	Unmarried	13	8.1
	Total	161	100.0
Experience	Below 5 Years	29	18.0
	5-10 Year	84	52.2
	10-15 Year	30	18.6
	15-20 Years	12	7.5

	Above 20 Years	6	3.7
	Total	161	100.0
Generation of business	1st Generation	125	77.6
	2nd Generation	31	19.3
	3rd Generation	5	3.1
	Total	161	100.0
Location of Business	Urban	149	92.5
	Rural	12	7.5
	Total	161	100.0
Business Type	Manufacturer	3	1.9
	Whole Seller	31	19.3
	Distributor	30	18.6
	Retailer	97	60.2
	Total	161	100.0
No. of Employees	Below 10	128	79.5
	10-15 Employees	17	10.6
	15-20 Employees	8	5.0
	20-25 Employees	6	3.7
	Above 25 Employees	2	1.2
	Total	161	100.0
Annual Turnover	Below 5 lakhs	149	92.5
	5-10 lakhs	9	5.6
	10-20 lakhs	1	.6
	20-50 lakhs	1	.6
	Above 50 lakhs	1	.6
	Total	161	100.0

Source: (Primary data)

- **Gender:** From the percentage analysis, it was found that out of 161 respondents considered for the study 157 [97.5 Percent] were male and remaining 4 [2.5 Percent] were female.

- **Age:** It was found that out of 161 respondents considered for the study; 5 [3.1 Percent] of the respondents are below 25 years, 12 [7.5 Percent] of the respondents are between 25-35 years, 96 [59.6 Percent] of the respondents are between 35-45 years, 31 [19.3 Percent] of the respondents are between 45-55 years and 17 [10.6 Percent] of the respondents are above 55 years.

- **Marital Status:** Out of 161 respondents considered for the study; 148 [91.9 Percent] of the respondents are married, and 13 [8.1 Percent] of the respondents are unmarried.

- **Experience:** About 18 percent of the respondents have below 5 years' experience, 52.2 percent of the respondents have 5-10 years' experience, 18.6 percent of them respondents have 10-15 years' experience, 7.5 percent of them

respondents have 15-20 years' of experience and the rest of them have above 20 years' of experience.

- **Generation of Business:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 125 [77.6 Percent] of the respondents are 1st generation Jasmine traders, 31 [19.3 Percent] are 2nd generation Jasmine Traders and 5 [3.7 Percent] of the respondents are 3rd generation Jasmine Traders.

- **Location of Business:** It was found that out of 161 respondents considered for the study; 149 [92.5 Percent] of the respondents are from Urban area and 12 [7.5 Percent] of the respondents are from Rural area.

- **Business Type:** Regarding the type of business owned, 3 [1.9 Percent] respondents are manufacturers, 31 [19.3 Percent] respondents are whole sellers, 30 [18.6 Percent] are distributors and 97 [60.2 Percent] are retailers.

- **No. of Employees:** Out of 161 respondents, 128 [79.5 Percent] respondents have below 10 employees, 17 [10.6 Percent] respondents have 10-15 employees, 8 [5 Percent] respondents have 15-20 employees, 6 [3.7 Percent] respondents have 20-25 employees and 2 [1.2 Percent] respondents have above 25 employees.

- **Annual Turnover:** It was found that out of 161 respondents considered for the study; 149 [92.5 Percent] respondents has annual turnover below 5 lakhs, 9 [5.6 Percent] respondents has annual turnover between 5-10 lakhs, 1 [0.6 Percent] respondents has annual turnover between 10-20 lakhs and 1 [0.6 Percent] respondents has annual turnover between 20-50 lakhs, 1 [0.6 Percent] respondents has annual turnover above 50 lakhs.

SECTION - B

4.3. PRE-PRODUCTION ISSUES

For the purpose of study, the Pre-Production Issues are segregated into three topics namely;

- Raw material issues,
- Financial issues and
- Human resources issues.

31

Whose analysis and interpretation are illustrated below in the forth coming pages.

4.3.1. Pre-Production Issues: Raw Material Issues and Gender

The independent sample test was carried out to identify whether there is significant difference in opinion for issues related to raw material with respect to gender.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to gender.

Table No. 4.2: Raw Material Issues and Gender

Independent Sample T Test: Raw Material Issues and Gender					
Gender	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Needed raw materials are available easily	2.900	1	2.900	2.159	.144
2. Good Quality raw materials are available from nearby places	.104	1	.104	.097	.756
3. Raw materials are available in different varieties	.401	1	.401	.293	.589
4. Various seasons affects availability of raw materials.	.043	1	.043	.036	.850
5. Price of raw material affects availability of raw material	.136	1	.136	.121	.729
6. Sorting of raw materials is easy.	1.729	1	1.729	1.423	.235
7. All grades of raw material are availed on time	1.102	1	1.102	.536	.465
8. Raw material perishability is a serious issue	.299	1	.299	.149	.700

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items the null hypothesis is accepted, hence there is no significant difference in opinion for issues related to raw material with respect to gender.

4.3.2. Pre-Production Issues: Raw Material Issues and Age

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to raw material with respect to age.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to age.

Table No. 4.3: Raw Material Issues and Age

Age	Type III Sum of Squares	df	Mean Square	F	Sig.
ANOVA: Raw Material Issues and Age					
1. Needed raw materials are available easily	1.683	3	.561	.418	.740
2. Good Quality raw materials are available from nearby places	4.608	3	1.536	1.442	.233
3. Raw materials are available in different varieties	.993	3	.331	.241	.867
4. Various seasons affects availability of raw materials.	.883	3	.294	.243	.866
5. Price of raw material affects availability of raw material	2.829	3	.943	.841	.474
6. Sorting of raw materials is easy.	1.702	3	.567	.467	.706
7. All grades of raw material are availed on time	.653	3	.218	.106	.957
8. Raw material perishability is a serious issue	1.676	3	.559	.279	.840

Source: (Primary data)

The computed value is greater than 0.05 for all the items , the null hypothesis is accepted that is there is no significant difference in opinion for issues related to raw material with respect to age.

4.3.3. Pre-Production Issues: Raw Material Issues and Marital Status

The Independent Sample Test was carried out to identify whether there is significant difference in opinion for issues related to raw material with respect to Marital Status.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to Marital Status.

Table No. 4.4: Raw Material Issues and Marital Status

ANOVA: Raw Material Issues and Marital Status					
Marital Status	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Needed raw materials are available easily	.298	1	.298	.222	.638
2. Good Quality raw materials are available from nearby places	.029	1	.029	.027	.869
3. Raw materials are available in different varieties	10.308	1	10.308	7.515	.007
4. Various seasons affects availability of raw materials.	.043	1	.043	.035	.851
5. Price of raw material affects availability of raw material	2.206	1	2.206	1.967	.163
6. Sorting of raw materials is easy.	.022	1	.022	.018	.893
7. All grades of raw material are availed on time	.004	1	.004	.002	.965
8. Raw material perishability is a serious issue	.010	1	.010	.005	.945

Source: (Primary data)

Table 4.4 shows that the calculated value is greater than 0.05 for all the items the null hypothesis is accepted that is there is no significant difference in opinion for issues related to raw material with respect to marital status.

But, for the items 3[Raw materials are available in different varieties] the estimated significance value is less than 0.05 the null hypothesis is rejected that is there is significant difference in opinion for issues related to raw material with respect to marital status.

4.3.4. Pre-Production Issues: Raw Material Issues and Experience

The ANOVA Test was carried out to identify whether there is significant difference in opinion for issues related to raw material with respect to experience.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to experience.

34

Table No. 4.5: Raw Material Issues and Experience

ANOVA: Raw Material Issues and Experience					
Experience	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Needed raw materials are available easily	9.767	3	3.256	2.424	.068
2. Good Quality raw materials are available from nearby places	2.916	3	.972	.913	.437
3. Raw materials are available in different varieties	.727	3	.242	.177	.912
4. Various seasons affects availability of raw materials.	1.848	3	.616	.509	.677
5. Price of raw material affects availability of raw material	9.421	3	3.140	2.800	.042
6. Sorting of raw materials is easy.	2.181	3	.727	.598	.617
7. All grades of raw material are availed on time	1.012	3	.337	.164	.920
8. Raw material perishability is a serious issue	4.829	3	1.610	.805	.493

Source: (Primary data)

Since the estimated significance value is greater than 0.05 for all the items meaning, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to raw material with respect to experience.

But, for the items 5 [Price of raw material affects availability of raw material] the estimated significance value is less than 0.05 which the null hypothesis is rejected, that is there is significant difference in opinion for issues related to raw material with respect to experience.

4.3.5. Pre-Production Issues: Raw Material Issues and Generation of Business

The ANOVA Test was carried out to find out whether there is significant difference in opinion for issues related to raw material with respect to generation of business.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to generation of business.

Table No. 4.6: Raw Material Issues and Generation of Business

ANOVA: Raw Material Issues and Generation of Business					
Generation of business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Needed raw materials are available easily	2.927	2	1.464	1.090	.339
2. Good Quality raw materials are available from nearby places	1.295	2	.648	.608	.546
3. Raw materials are available in different varieties	1.127	2	.563	.411	.664
4. Various seasons affects availability of raw materials.	6.127	2	3.063	2.530	.083
5. Price of raw material affects availability of raw material	1.961	2	.981	.875	.419
6. Sorting of raw materials is easy.	1.111	2	.556	.457	.634
7. All grades of raw material are availed on time	2.550	2	1.275	.620	.539
8. Raw material perishability is a serious issue	6.958	2	3.479	1.739	.180

Source: (Primary data)

Table 4.6 portrays that the calculated value is greater than 0.05 for all the items the null hypothesis is accepted, that is there is no significant difference in opinion for issues related to raw material with respect to generation of business.

4.3.6. Pre-Production Issues: Raw Material Issues and Location of Business

The Independent Sample Test was carried out to identify whether there is significant difference in opinion for issues related to raw material with respect to Location of Business.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to Location of Business.

Table No. 4.7: Raw Material Issues and Location of Business

Independent Sample T Test: Raw Material Issues and Location of Business

Location of Business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Needed raw materials are available easily	.550	1	.550	.410	.523
2. Good Quality raw materials are available from nearby places	.391	1	.391	.367	.545
3. Raw materials are available in different varieties	1.382	1	1.382	1.008	.317
4. Various seasons affects availability of raw materials.	2.485	1	2.485	2.052	.154
5. Price of raw material affects availability of raw material	8.001	1	8.001	7.135	.008
6. Sorting of raw materials is easy.	.837	1	.837	.689	.408
7. All grades of raw material are availed on time	5.017	1	5.017	2.442	.120
8. Raw material perishability is a serious issue	6.437	1	6.437	3.217	.075

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to raw material with respect to location of business.

But, for the items 5 [Price of raw material affects availability of raw material] the estimated significance value is less than 0.05, the null hypothesis is rejected that is there is significant difference in opinion for issues related to raw material with respect to Location of Business.

4.3.7. Pre-Production Issues: Raw Material Issues and Business Type

The ANOVA Test was employed to identify whether there is significant difference in opinion for issues related to raw material with respect to Location of Business.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to Location of Business.

Table No. 4.8: Raw Material Issues and Business Type

ANOVA: Raw Material Issues and Business Type

Business Type	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Needed raw materials are available easily	2.950	2	1.475	1.099	.336
2. Good Quality raw materials are available from nearby places	.035	2	.017	.016	.984
3. Raw materials are available in different varieties	1.456	2	.728	.531	.589
4. Various seasons affects availability of raw materials.	3.961	2	1.980	1.635	.199
5. Price of raw material affects availability of raw material	4.844	2	2.422	2.160	.119
6. Sorting of raw materials is easy.	1.892	2	.946	.778	.461
7. All grades of raw material are availed on time	.951	2	.476	.231	.794
8. Raw material perish ability is a serious issue	12.566	2	6.283	3.140	.046

Source: (Primary data)

Table 4.8 reveals that the estimated significance value is greater than 0.05 for all the items meaning, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to raw material with respect to location of business.

But, for the items 8 [Raw material perish ability is a serious issue] the estimated significance value is less than 0.05, the null hypothesis is rejected that is, there is significant difference in opinion for issues related to raw material with respect to location of business.

4.3.8. Pre-Production Issues: Raw Material Issues and No. of Employees

The ANOVA Test was used to identify whether there is significant difference in opinion for issues related to raw material with respect to No. of Employees.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to No. of Employees.

Table No. 4.9: Raw Material Issues and No. of Employees
ANOVA: Raw Material Issues and No. of Employees

No. of Employees	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Needed raw materials are available easily	2.221	3	.740	.551	.648
2. Good Quality raw materials are available from nearby places	.250	3	.083	.078	.972
3. Raw materials are available in different varieties	2.358	3	.786	.573	.634
4. Various seasons affects availability of raw materials.	.941	3	.314	.259	.855
5. Price of raw material affects availability of raw material	3.671	3	1.224	1.091	.355
6. Sorting of raw materials is easy.	2.831	3	.944	.777	.509
7. All grades of raw material are availed on time	2.954	3	.985	.479	.697
8. Raw material perishability is a serious issue	7.103	3	2.368	1.183	.318

Source: (Primary data)

As per the survey made, the estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to raw material with respect to number of Employees.

4.3.9. Pre-Production Issues: Raw Material Issues and Annual Turnover

The ANOVA Test was carried out to identify whether there is significant difference in opinion for issues related to raw material with respect to annual turnover.

The null hypothesis is that there is no significant difference in opinion for issues related to raw material with respect to annual turnover.

Table No. 4.10: Raw Material Issues and Annual Turnover

ANOVA: Raw Material Issues and Annual Turnover

Annual Turnover	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Needed raw materials are available easily	.082	2	.041	.031	.970
2. Good Quality raw materials are available from nearby places	.039	2	.020	.018	.982
3. Raw materials are available in different varieties	4.714	2	2.357	1.719	.183
4. Various seasons affects availability of raw materials.	.877	2	.438	.362	.697
5. Price of raw material affects availability of raw material	.728	2	.364	.325	.723
6. Sorting of raw materials is easy.	2.635	2	1.318	1.084	.341
7. All grades of raw material are availed on time	.302	2	.151	.073	.929
8. Raw material perishability is a serious issue	2.278	2	1.139	.569	.567

Source: (Primary data)

Table 4.10 elucidates that the estimated significance value is greater than 0.05 for all the items meaning, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to raw material with respect to annual turnover.

4.3.10. Rank Analysis: Raw material Issues

Here in rank analysis was carried to identify the important issues associated with raw material in Jasmine trade.

Table No. 4.11: Raw material Issues

Rank Analysis: Raw material Issues	Mean	Rank
1. Needed raw materials are available easily	3.8509	2
2. Good Quality raw materials are available from nearby places	2.4410	8
3. Raw materials are available in different varieties	3.5714	4
4. Various seasons affects availability of raw materials.	3.7019	3
5. Price of raw material affects availability of raw material	3.5217	5
6. Sorting of raw materials is easy.	3.8509	1
7. All grades of raw material are availed on time	2.9068	7
8. Raw material perishability is a serious issue	2.9441	6

Source: (Primary data)

From the rank analysis, it is found that the mean score illustrate the following are the least important issues associated with raw material in Jasmine trade.

1. Good Quality of raw materials are not available from nearby places
2. All grades of raw material cannot be availed on time
3. Raw material perishability is a serious issue

4.3.11. Pre-Production Issues: Financial Issues and Gender

The Independent Sample Test was carried out to find out whether there is significant difference in opinion for issues related to finance with respect to gender.

The null hypothesis is that there is no significant difference in opinion for issues related to finance with respect to gender.

Table No. 4.12: Financial Issues and Gender

Independent Sample T Test: Financial Issues and Gender					
Gender	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Have adequate knowledge about government financial assistance schemes	.945	1	.945	.527	.469
2. Have availed financial assistance for business	.460	1	.460	.250	.618
3. Have got benefits of government subsidies	2.397	1	2.397	1.249	.266
4. Interest rates of loan affects the business	.207	1	.207	.100	.752
5. Loan instalments are paid from business on time	.102	1	.102	.057	.812
6. Advance payments to the farmers for business are difficult.	.560	1	.560	.289	.592
7. Insurance payments is considered a burden	.055	1	.055	.025	.874
8. Delay in payments from customers affects business sustainability	.561	1	.561	.322	.571
9. Banking, funding formalities for financial assistance are easily accessible	.185	1	.185	.093	.761
10. Foreign exchange rate affects business sustainability	.776	1	.776	.384	.537

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items for which, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to finance with respect to gender.

4.3.12. Pre-Production Issues: Financial Issues and Age

The ANOVA Test was applied to identify whether there is significant difference in opinion for issues related to finance with respect to age.

The null hypothesis here is that there is no significant difference in opinion for issues related to finance with respect to age.

Table No. 4.13: Financial Issues and Age

ANOVA: Financial Issues and Age					
Age	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Have adequate knowledge about government financial assistance schemes	9.637	3	3.212	1.790	.152
2. Have availed financial assistance for business	4.813	3	1.604	.871	.458
3. Have got benefits of government subsidies	5.936	3	1.979	1.031	.381
4. Interest rates of loan affects the business	6.882	3	2.294	1.109	.348
5. Loan instalments are paid from business on time	3.244	3	1.081	.601	.616
6. Advance payments to the farmers for business are difficult.	7.442	3	2.481	1.280	.284
7. Insurance payments is considered a burden	2.464	3	.821	.378	.769
8. Delay in payments from customers affects business sustainability	6.267	3	2.089	1.200	.312
9. Banking, funding formalities for financial assistance are easily accessible	1.128	3	.376	.189	.904
10. Foreign exchange rate affects business sustainability	5.773	3	1.924	.952	.417

Source: (Primary data)

Table 4.13 portrays that the estimated significance value is greater than 0.05 for all the items hence, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to finance with respect to age.

4.3.13. Pre-Production Issues: Financial Issues and Marital Status

The Independent Sample Test was used to identify whether there is significant difference in opinion for issues related to finance with respect to Marital Status.

The null hypothesis is that there is no significant difference in opinion for issues related to finance with respect to Marital Status.

Table No. 4.14: Financial Issues and Marital Status

Independent Sample T Test: Financial Issues and Marital Status					
Marital Status	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1. Have adequate knowledge about government financial assistance schemes	.055	1	.055	.031	.861
2. Have availed financial assistance for business	1.077	1	1.077	.585	.446
3. Have got benefits of government subsidies	.104	1	.104	.054	.816
4. Interest rates of loan affects the business	1.537	1	1.537	.743	.390
5. Loan instalments are paid from business on time	5.559	1	5.559	3.088	.081
6. Advance payments to the farmers for business are difficult.	.001	1	.001	.001	.981
7. Insurance payments is considered a burden	2.079	1	2.079	.958	.329
8. Delay in payments from customers affects business sustainability	1.780	1	1.780	1.022	.314
9. Banking, funding formalities for financial assistance are easily accessible	.919	1	.919	.461	.498
10. Foreign exchange rate affects business sustainability	4.825	1	4.825	2.387	.125

Source: (Primary data)

As per the Table 4.14 it is that the calculated value is greater than 0.05 for all the items, the null hypothesis is accepted that is, there is no significant difference in opinion for issues related to Finance with respect to marital status.

4.3.14. Pre-Production Issues: Financial Issues and Experience

The ANOVA Test has been applied to find out whether there is significant difference in opinion for issues related to finance with respect to Experience.

The null hypothesis is that there is no significant difference in opinion for issues related to finance with respect to experience.

Table No. 4.15: Financial Issues and Experience

ANOVA: Financial Issues and Experience					
Experience	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Have adequate knowledge about government financial assistance schemes	6.809	3	2.270	1.265	.289
2. Have availed financial assistance for business	3.582	3	1.194	.648	.585
3. Have got benefits of government subsidies	4.109	3	1.370	.714	.545
4. Interest rates of loan affects the business	.918	3	.306	.148	.931
5. Loan instalments are paid from business on time	4.540	3	1.513	.841	.474
6. Advance payments to the farmers for business are difficult.	4.052	3	1.351	.697	.555
7. Insurance payments is considered a burden	10.061	3	3.354	1.546	.206
8. Delay in payments from customers affects business sustainability	7.618	3	2.539	1.458	.229
9. Banking, funding formalities for financial assistance are easily accessible	1.598	3	.533	.267	.849
10. Foreign exchange rate affects business sustainability	8.138	3	2.713	1.342	.263

Source: (Primary data)

Table 4.15 exhibits the estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to Finance with respect to Experience.

4.3.15. Pre-Production Issues: Financial Issues and Generation of Business

The ANOVA Test was used to find out to identify whether there is significant difference in opinion for issues related to finance with respect to generation of business.

The null hypothesis is that there is no significant difference in opinion for issues related to finance with respect to generation of business.

44

Table No. 4.16: Financial Issues and Generation of Business

ANOVA: Financial Issues and Generation of Business

Generation of business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Have adequate knowledge about government financial assistance schemes	4.611	2	2.305	1.285	.280
2. Have availed financial assistance for business	5.381	2	2.690	1.460	.236
3. Have got benefits of government subsidies	12.467	2	6.234	3.249	.042
4. Interest rates of loan affects the business	3.942	2	1.971	.953	.388
5. Loan instalments are paid from business on time	4.693	2	2.347	1.304	.275
6. Advance payments to the farmers for business are difficult.	5.764	2	2.882	1.487	.230
7. Insurance payments is considered a burden	.317	2	.159	.073	.929
8. Delay in payments from customers affects business sustainability	1.314	2	.657	.377	.686
9. Banking, funding formalities for financial assistance are easily accessible	.388	2	.194	.097	.907
10. Foreign exchange rate affects business sustainability	3.031	2	1.515	.750	.474

Source: (Primary data)

Table 4.16 explains that the estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted, that is there is no significant difference in opinion for issues related to Finance with respect to generation of business.

But, for the items 3 [Have got benefits of government subsidies] the estimated significance value is less than 0.05 for which the null hypothesis is rejected that is there is significant difference in opinion for issues related to Finance with respect to generation of business.

4.3.16. Pre-Production Issues: Financial Issues and Location

The Independent Sample Test has been applied to identify whether there is significant difference in opinion for issues related to finance with respect to location.

The null hypothesis is that there is no significant difference in opinion for issues related to finance with respect to location.

Table No. 4.17: Financial Issues and Location

Independent Sample T Test: Financial Issues and Location

Location of Business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Have adequate knowledge about government financial assistance schemes	4.091	1	4.091	2.280	.133
2. Have availed financial assistance for business	.042	1	.042	.023	.880
3. Have got benefits of government subsidies	.163	1	.163	.085	.771
4. Interest rates of loan affects the business	2.415	1	2.415	1.167	.282
5. Loan instalments are paid from business on time	3.595	1	3.595	1.997	.160
6. Advance payments to the farmers for business are difficult.	.223	1	.223	.115	.735
7. Insurance payments is considered a burden	.239	1	.239	.110	.740
8. Delay in payments from customers affects business sustainability	5.183	1	5.183	2.977	.087
9. Banking, funding formalities for financial assistance are easily accessible	3.457	1	3.457	1.734	.190
10. Foreign exchange rate affects business sustainability	.021	1	.021	.010	.920

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is, there is no significant difference in opinion for issues related to finance with respect to generation of business.

4.3.17. Pre-Production Issues: Financial Issues and Business Type

The ANOVA Test was applied to identify whether there is significant difference in opinion for issues related to finance with respect to business types.

The null hypothesis is that there is no significant difference in opinion for issues related to finance with respect to business types.

Table No. 4.18: Financial Issues and Business Type
ANOVA: Financial Issues and Business Type

Business Type	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Have adequate knowledge about government financial assistance schemes	1.428	2	.714	.398	.672
2. Have availed financial assistance for business	9.454	2	4.727	2.566	.081
3. Have got benefits of government subsidies	1.534	2	.767	.400	.671
4. Interest rates of loan affects the business	7.235	2	3.618	1.749	.178
5. Loan instalments are paid from business on time	2.655	2	1.328	.738	.480
6. Advance payments to the farmers for business are difficult.	14.867	2	7.434	3.836	.024
7. Insurance payments is considered a burden	2.369	2	1.184	.546	.581
8. Delay in payments from customers affects business sustainability	6.547	2	3.274	1.880	.156
9. Banking, funding formalities for financial assistance are easily accessible	4.072	2	2.036	1.021	.363
10. Foreign exchange rate affects business sustainability	.350	2	.175	.087	.917

Source: (Primary data)

The calculated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to finance with respect to business types.

But, for the items 6 [Advance payments to the farmers for business are difficult] the estimated significance value is less than 0.05, the null hypothesis is rejected that is there is significant difference in opinion for issues related to finance with respect to business types.

4.3.18. Pre-Production Issues: Financial Issues and No. of Employees

The ANOVA Test was used to identify whether there is significant difference in opinion for issues related to finance with respect to number of employees.

The null hypothesis is that there is no significant difference in opinion for issues related to finance with respect to number of employees.

47

Table No. 4.19: Financial Issues and No. of Employees

ANOVA: Financial Issues and No. of Employees

No. of Employees	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Have adequate knowledge about government financial assistance schemes	.738	3	.246	.137	.938
2. Have availed financial assistance for business	3.121	3	1.040	.565	.639
3. Have got benefits of government subsidies	6.908	3	2.303	1.200	.312
4. Interest rates of loan affects the business	14.644	3	4.881	2.360	.074
5. Loan instalments are paid from business on time	13.621	3	4.540	2.522	.060
6. Advance payments to the farmers for business are difficult.	3.575	3	1.192	.615	.606
7. Insurance payments is considered a burden	7.331	3	2.444	1.126	.341
8. Delay in payments from customers affects business sustainability	2.335	3	.778	.447	.720
9. Banking, funding formalities for financial assistance are easily accessible	1.197	3	.399	.200	.896
10. Foreign exchange rate affects business sustainability	7.517	3	2.506	1.240	.298

Source: (Primary data)

Since the calculated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to Finance with respect to number of employees.

4.3.19. Pre-Production Issues: Financial Issues and Annual Turnover

The ANOVA Test was used to identify whether there is significant difference in opinion for issues related to finance with respect to annual turnover.

The null hypothesis is that there is no significant difference in opinion for issues related to finance with respect to annual turnover.

Table No. 4.20: Financial Issues and Annual Turnover

ANOVA: Financial Issues and Annual Turnover

Annual Turnover	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Have adequate knowledge about government financial assistance schemes	2.550	2	1.275	.711	.493
2. Have availed financial assistance for business	3.361	2	1.681	.912	.404
3. Have got benefits of government subsidies	.457	2	.228	.119	.888
4. Interest rates of loan affects the business	8.979	2	4.490	2.170	.118
5. Loan instalments are paid from business on time	1.940	2	.970	.539	.585
6. Advance payments to the farmers for business are difficult.	7.711	2	3.855	1.990	.141
7. Insurance payments is considered a burden	2.780	2	1.390	.640	.529
8. Delay in payments from customers affects business sustainability	6.854	2	3.427	1.968	.144
9. Banking, funding formalities for financial assistance are easily accessible	3.667	2	1.833	.919	.401
10. Foreign exchange rate affects business sustainability	2.596	2	1.298	.642	.528

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to finance with respect to annual turnover.

4.3.20. Rank Analysis: Financial Issues

Herein rank analysis was carried to identify the important issues associated with financial issues in Jasmine trade.

49

Table No. 4.21: Rank Analysis: Financial Issues

Rank Analysis: Financial Issues	Mean Score	Rank
1. Have adequate knowledge about government financial assistance schemes	3.1615	2
2. Have availed financial assistance for business	3.1118	4
3. Have got benefits of government subsidies	2.9068	10
4. Interest rates of loan affects the business	3.0124	7
5. Loan instalments are paid from business on time	3.2174	1
6. Advance payments to the farmers for business are difficult.	3.0311	6
7. Insurance payments is considered a burden	3.1366	3
8. Delay in payments from customers affects business sustainability	2.9130	9
9. Banking, funding formalities for financial assistance are easily accessible	3.0807	5
10. Foreign exchange rate affects business sustainability	3.0062	8

Source: (Primary data)

Table 4.21 illustrate the least five ranks which are given below

1. Have got benefits of government subsidies

2. Delay in payments from customers affects business sustainability

3. Foreign exchange rate affects business sustainability

4. Interest rates of loan affects the business

5. Advance payments to the farmers for business are difficult.

50

4.3.21. Pre-Production Issues: Human Resource Issues and Gender

The independent sample 't' test was carried out to identify whether there is significant difference in opinion for issues related to Human Resource with respect to gender.

The null hypothesis is that there is no significant difference in opinion for issues related to human resource with respect to gender.

Table No. 4.22: Human Resource Issues and Gender
Independent Sample T Test: Human Resource Issues and Gender

Gender	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	2.266	1	2.266	1.041	.309
2. Availability of alternate/substitute labor	1.338	1	1.338	.665	.416
3. Providing training to labor	1.429	1	1.429	.634	.427
4. Spending for training and development to improve skills of labor	1.285	1	1.285	.581	.447
5. Income/ salary to the labor	.037	1	.037	.019	.890
6. Safety & security to employee/ labor	5.367	1	5.367	2.802	.096

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to Human Resource with respect to Gender.

4.3.22. Pre-Production Issues: Human Resource Issues and Age

The ANOVA test was used to identify whether there is significant difference in opinion for issues related to Human Resource with respect to age.

The null hypothesis is that there is no significant difference in opinion for issues related to human resource with respect to age.

51

Table No. 4.23: Human Resource Issues and Age

ANOVA: Human Resource Issues and Age

Age	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	6.740	3	2.247	1.032	.381
2. Availability of alternate/substitute labor	13.719	3	4.573	2.275	.083
3. Providing training to labor	.600	3	.200	.089	.966
4. Spending for training and development to improve skills of labor	2.644	3	.881	.398	.754
5. Income/ salary to the labor	18.105	3	6.035	3.094	.029
6. Safety & security to employee/ labor	2.659	3	.886	.463	.709

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted for which there is no significant difference in opinion for issues related to Human Resource with respect to age.

But, for the items 5[Income/ salary to the labor] the estimated significance value is less than 0.05, the null hypothesis is rejected that is there is significant difference in opinion for issues related to human resource with respect to age.

4.3.23. Pre-Production Issues: Human Resource Issues and Marital Status

The Independent Sample 't' Test is applied to identify whether there is significant difference in opinion for issues related to Human Resource with respect to Martial Status.

The null hypothesis is that there is no significant difference in opinion for issues related to Human Resource with respect to Marital Status.

Table No. 4.24: Human Resource Issues and Marital Status

Independent Sample T Test: Human Resource Issues and Marital Status

Marital Status	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	5.062	1	5.062	2.324	.130
2. Availability of alternate/substitute labor	3.022	1	3.022	1.503	.222
3. Providing training to labor	2.183	1	2.183	.968	.327
4. Spending for training and development to improve skills of labor	.407	1	.407	.184	.669
5. Income/ salary to the labor	1.064	1	1.064	.545	.461
6. Safety & security to employee/ labor	.006	1	.006	.003	.956

Source: (Primary data)

The calculated value is greater than 0.05 for all the items, the null hypothesis is accepted hence, there is no significant difference in opinion for issues related to Human Resource with respect to Marital Status.

4.3.24. Pre-Production Issues: Human Resource Issues and Experience

The ANOVA test has been used to identify whether there is significant difference in opinion for issues related to Human Resource with respect to experience.

The null hypothesis is that the experience do not influence human resource issue.

Table No. 4.25: Human Resource Issues and Experience

ANOVA: Human Resource Issues and Experience

Experience	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	3.955	3	1.318	.605	.613
2. Availability of alternate/substitute labor	4.625	3	1.542	.767	.514
3. Providing training to labor	4.117	3	1.372	.609	.611
4. Spending for training and development to improve skills of labor	1.489	3	.496	.224	.879
5. Income/ salary to the labor	10.037	3	3.346	1.715	.167
6. Safety & security to employee/ labor	2.565	3	.855	.447	.720

Source: (Primary data)

53

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted and there is no significant difference in opinion for issues related to human resource with respect to experience.

4.3.25. Pre-Production Issues: Human Resource Issues and Generation of Business

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to human resource with respect to generation of business.

The null hypothesis is that there is no significant difference in human resource issue with respect to generation of business.

Table No. 4.26: Human Resource Issues and Generation of Business

ANOVA: Human Resource Issues and Generation of Business					
Generation of business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	4.316	2	2.158	.991	.374
2. Availability of alternate/substitute labor	2.054	2	1.027	.511	.601
3. Providing training to labor	5.318	2	2.659	1.179	.311
4. Spending for training and development to improve skills of labor	1.903	2	.951	.430	.651
5. Income/ salary to the labor	1.431	2	.716	.367	.694
6. Safety & security to employee/ labor	.326	2	.163	.085	.918

Source: (Primary data)

Since the calculated value is greater than 0.05 for all the items, the null hypothesis is accepted and there is no significant difference in opinion for issues related to Human Resource with respect to generation of business.

4.3.26. Pre-Production Issues: Human Resource Issues and Location of Business

The ANOVA test was applied to identify whether there is significant difference in opinion for issues related to Human Resource with respect to Location of Business.

The null hypothesis is that there is no significant difference in the issues related to Human Resource with respect to Location of Business.

Table No. 4.27: Human Resource Issues and Location of Business

Independent Sample T Test: Human Resource Issues and Location of Business

Location of Business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	.002	1	.002	.001	.977
2. Availability of alternate/substitute labor	5.048	1	5.048	2.511	.115
3. Providing training to labor	.038	1	.038	.017	.897
4. Spending for training and development to improve skills of labor	2.602	1	2.602	1.176	.280
5. Income/ salary to the labor	8.474	1	8.474	4.345	.039
6. Safety & security to employee/ labor	4.101	1	4.101	2.142	.146

Source: (Primary data)

The calculated value is greater than 0.05 for all the items meaning, the null hypothesis is accepted and there is no significant difference in between the issues related to human resource and location of business.

But, for the items 5[Income/ salary to the labour] the estimated value is less than 0.05 for the items that the null hypothesis is rejected that is there is significant difference in opinion for issues related to Human Resource with respect to location of business.

4.3.27. Pre-Production Issues: Human Resource Issues and Business Type

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to human resource with respect to business type. The human resource issue normally depends on the types of business in order to find out the relationship the ANOVA test has been applied.

The null hypothesis is that the types of business do not influence the human resource issue.

Table No. 4.28: Human Resource Issues and Business Type

ANOVA: Human Resource Issues and Business Type

Business Type	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	3.431	2	1.715	.788	.457
2. Availability of alternate/substitute labor	9.327	2	4.663	2.320	.102
3. Providing training to labor	3.974	2	1.987	.881	.417
4. Spending for training and development to improve skills of labor	1.091	2	.546	.246	.782
5. Income/ salary to the labor	10.899	2	5.450	2.794	.065
6. Safety & security to employee/ labor	5.299	2	2.650	1.384	.254

Source: (Primary data)

Table 4.28 shows that the estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to human resource with respect to business types.

4.3.28. Pre-Production Issues: Human Resource Issues and No. of Employees

The human resource purely depends on the number of employees in order to ascertain the relationship the ANOVA test has been used. The ANOVA test was used to identify whether there is significant difference in opinion for issues related to human resource with respect to no. of employees.

The null hypothesis is that the numbers of employees do not influence any of the human resource issues.

Table No. 4.29: Human Resource Issues and No. of Employees

ANOVA: Human Resource Issues and No. of Employees

No. of Employees	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	4.403	3	1.468	.674	.569
2. Availability of alternate/substitute labor	8.984	3	2.995	1.490	.220
3. Providing training to labor	11.736	3	3.912	1.735	.163
4. Spending for training and development to improve skills of labor	5.259	3	1.753	.792	.500
5. Income/ salary to the labor	7.846	3	2.615	1.341	.264
6. Safety & security to employee/ labor	5.655	3	1.885	.984	.402

Source: (Primary data)

The calculated value is greater than 0.05 for all the items, the null hypothesis is accepted for which there is no significant difference in opinion for issues related to human resource with respect to no. of employees.

4.3.29. Pre-Production Issues: Human Resource Issues and Annual Turnover

The human resource issue and the annual turnover has direct relationship in order to know it the ANOVA test has been employed. The ANOVA test was used to identify whether there is significant difference in opinion for issues related to human resource with respect to annual turnover.

The null hypothesis is that the annual turnover does not influence the human resource issue.

Table No. 4.30: Human Resource Issues and Business Type

ANOVA: Human Resource Issues and Annual Turnover					
Annual Turnover	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Availability of Skilled labor	.916	2	.458	.210	.811
2. Availability of alternate/substitute labor	7.919	2	3.959	1.969	.143
3. Providing training to labor	.113	2	.056	.025	.975
4. Spending for training and development to improve skills of labor	2.220	2	1.110	.502	.607
5. Income/ salary to the labor	.652	2	.326	.167	.846
6. Safety & security to employee/ labor	.269	2	.134	.070	.932

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted, that is there is no significant difference in opinion for issues related to human resource with respect to annual turnover.

4.3.30. Rank Analysis: Human Resource Issues

The rank analysis was carried to identify the important issues associated with human resource in Jasmine trade.

57

Scanned with OKEN Scanner

Table No. 4.31: Rank Analysis: Human Resource Issues

Rank Analysis: Human Resource Issues	Mean	Rank
1. Availability of Skilled labor	3.2422	2
2. Availability of alternate/substitute labor	2.8820	5
3. Providing training to labor	2.8634	6
4. Spending for training and development to improve skills of labor	3.1242	3
5. Income/ salary to the labor	2.9752	4
6. Safety & security to employee/ labor	3.3416	1

Source: (Primary data)

From the Rank analysis, it was carried out that using the mean score illustrate the following least important issues associated with Human Resource in Jasmine trade.

1. Providing training to labour
2. Non Availability of alternate/substitute labour
3. Income/ salary to the labour

SECTION – C

4.4. POST-PRODUCTION

For the purpose of study, the Post-Production Issues are segregated into three topics namely;

- Marketing issues,
- Logistic and Transportation issues and
- Profitability issues.

Whose analysis and interpretation are illustrated below and forth coming pages.

4.4.1. Post-Production: Marketing Issues and Gender

Gender plays a vital role among the jasmine entrepreneurs. The Independent Sample 't' test has been employed to identify whether there is significant difference in opinion for issues related to Marketing with respect to gender. The null hypothesis is

that there is no significant difference in opinion for issues related to marketing and to gender.

Table No. 4.32: Marketing Issues and Gender

Independent Sample 'T' Test: Marketing Issues and Gender

Gender	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	4.373	1	4.373	2.455	.119
2. Substitute products affect marketing of the product	3.988	1	3.988	3.055	.083
3. Marketing strategy of competitors affects products or business	2.817	1	2.817	1.501	.223
4. There is demand for the product in market always	.068	1	.068	.037	.847
5. Branding is a barrier in marketing of the products	2.949	1	2.949	1.449	.231
6. Product price is affordable to the customers	4.536	1	4.536	2.344	.128
7. Our product need more promotion	.305	1	.305	.155	.695
8. Quality of packing is good for the product	3.096	1	3.096	1.521	.220
9. Lack of communication is a barrier in marketing	1.948	1	1.948	1.080	.301
10. Skilled marketing persons are availed for the business	1.647	1	1.647	.824	.366

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to marketing with respect to gender.

4.4.2. Post-Production: Marketing Issues and Age

Age and marketing issues are closely correlated. In order to find out that ANOVA test has been used. The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to marketing with respect to age.

The null hypothesis is that there is no significant difference in opinion for issues related to marketing with respect to age.

59

Table No. 4.33: Marketing Issues and Age
ANOVA: Marketing Issues and Age

Age	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	.914	3	.305	.171	.916
2. Substitute products affect marketing of the product	.073	3	.024	.019	.997
3. Marketing strategy of competitors affects products or business	25.133	3	8.378	4.464	.005
4. There is demand for the product in market always	8.504	3	2.835	1.565	.201
5. Branding is a barrier in marketing of the products	8.045	3	2.682	1.317	.271
6. Product price is affordable to the customers	4.425	3	1.475	.762	.517
7. Our product need more promotion	7.051	3	2.350	1.192	.315
8. Quality of packing is good for the product	7.017	3	2.339	1.150	.331
9. Lack of communication is a barrier in marketing	2.083	3	.694	.385	.764
10. Skilled marketing persons are availed for the business	1.671	3	.557	.279	.841

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted and there is no significant difference in opinion for issues related to marketing with respect to age.

But, for the item 3 [Marketing strategy of competitors affects products or business] the calculated value is less than 0.05, the null hypothesis is rejected that is there is significant difference in opinion for issues related to marketing with respect to age.

4.4.3. Post-Production: Marketing Issues and Marital Status

The Independent Sample test was applied to identify whether there is significant difference in opinion for issues related to marketing with respect to marital status.

The null hypothesis is that there is no significant difference in opinion for issues related to marketing with respect to marital status.

Table No. 4.34: Marketing Issues and Marital Status

Independent Sample 'T' Test: Marketing Issues and Marital Status

Marital Status	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	.159	1	.159	.089	.766
2. Substitute products affect marketing of the product	4.034	1	4.034	3.091	.081
3. Marketing strategy of competitors affects products or business	1.848	1	1.848	.985	.323
4. There is demand for the product in market always	2.971	1	2.971	1.640	.202
5. Branding is a barrier in marketing of the products	2.622E-05	1	2.622E-05	.000	.997
6. Product price is affordable to the customers	.167	1	.167	.086	.769
7. Our product need more promotion	1.415	1	1.415	.717	.398
8. Quality of packing is good for the product	.320	1	.320	.157	.692
9. Lack of communication is a barrier in marketing	.990	1	.990	.549	.460
10. Skilled marketing persons are availed for the business	.464	1	.464	.232	.631

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted hence there is no significant difference in opinion for issues related to marketing with respect to marital status.

4.4.4. Post-Production: Marketing Issues and Experience

For marketing, experienced persons are higher required. The ANOVA test has been applied to identify whether there is significant difference in opinion for issues related to marketing with respect to experience.

The null hypothesis is that there is no significant difference in opinion for issues related to marketing with respect to experience.

Table No. 4.35: Marketing Issues and Experience

ANOVA: Marketing Issues and Experience

Experience	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	3.087	3	1.029	.578	.631
2. Substitute products affect marketing of the product	.119	3	.040	.030	.993
3. Marketing strategy of competitors affects products or business	1.792	3	.597	.318	.812
4. There is demand for the product in market always	.172	3	.057	.032	.992
5. Branding is a barrier in marketing of the products	3.810	3	1.270	.624	.601
6. Product price is affordable to the customers	3.598	3	1.199	.620	.603
7. Our product need more promotion	17.949	3	5.983	3.034	.031
8. Quality of packing is good for the product	10.896	3	3.632	1.785	.153
9. Lack of communication is a barrier in marketing	8.825	3	2.942	1.630	.185
10. Skilled marketing persons are availed for the business	8.469	3	2.823	1.413	.242

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted, hence there is no significant difference in opinion for issues related to Marketing with respect to Experience.

But, for the item 3 [Our Product need more promotion] the estimated significance value is less than 0.05, the null hypothesis is rejected and there is significant difference in opinion for issues related to Marketing with respect to Experience.

4.4.5. Post-Production: Marketing Issues and Generation of Business

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to marketing with respect to generation of business.

The null hypothesis is that there is no significant difference in opinion for issues related to marketing with respect to generation of business.

62

Table No. 4.36: Marketing Issues and Generation of Business

ANOVA: Marketing Issues and Generation of Business

Generation of business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	1.331	2	.665	.373	.689
2. Substitute products affect marketing of the product	3.617	2	1.809	1.386	.254
3. Marketing strategy of competitors affects products or business	.623	2	.311	.166	.847
4. There is demand for the product in market always	6.299	2	3.149	1.739	.180
5. Branding is a barrier in marketing of the products	2.183	2	1.091	.536	.586
6. Product price is affordable to the customers	.057	2	.028	.015	.985
7. Our product need more promotion	2.708	2	1.354	.687	.505
8. Quality of packing is good for the product	8.338	2	4.169	2.049	.133
9. Lack of communication is a barrier in marketing	5.576	2	2.788	1.545	.217
10. Skilled marketing persons are availed for the business	.283	2	.141	.071	.932

Source: (Primary data)

The calculated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to marketing with respect to generation of business.

4.4.6. Post-Production: Marketing Issues and Location of Business

Location of business is very important for business; jasmine business is not an exemption too. The Independent Sample test has been used to identify whether there is significant difference in opinion for issues related to marketing with respect to location of business.

The null hypothesis is that there is no significant difference in opinion for issues related to marketing with respect to location of business.

Table No. 4.37: Marketing Issues and Location of Business

Independent Sample T Test: Marketing Issues and Location of Business

Location of Business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	.984	1	.984	.553	.459
2. Substitute products affect marketing of the product	.315	1	.315	.241	.624
3. Marketing strategy of competitors affects products or business	2.120	1	2.120	1.130	.290
4. There is demand for the product in market always	6.400	1	6.400	3.533	.062
5. Branding is a barrier in marketing of the products	1.458	1	1.458	.716	.399
6. Product price is affordable to the customers	.917	1	.917	.474	.492
7. Our product need more promotion	.296	1	.296	.150	.699
8. Quality of packing is good for the product	6.319	1	6.319	3.105	.080
9. Lack of communication is a barrier in marketing	.009	1	.009	.005	.943
10. Skilled marketing persons are availed for the business	1.337	1	1.337	.669	.415

Source: (Primary data)

Since, the calculated value, is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to marketing with respect to location of business.

4.4.7. Post-Production: Marketing Issues and Business Type

The ANOVA test has been employed to identify whether there is significant difference in opinion for issues related to marketing with respect to business type.

The null hypothesis is that there is no significant difference in opinion for issues related to marketing with respect to business type.

Table No. 4.38: Marketing Issues and Business Type
ANOVA: Marketing Issues and Business Type

Business Type	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	1.571	2	.786	.441	.644
2. Substitute products affect marketing of the product	1.878	2	.939	.720	.489
3. Marketing strategy of competitors affects products or business	6.984	2	3.492	1.861	.159
4. There is demand for the product in market always	5.298	2	2.649	1.462	.235
5. Branding is a barrier in marketing of the products	4.914	2	2.457	1.207	.302
6. Product price is affordable to the customers	2.117	2	1.058	.547	.580
7. Our product need more promotion	10.904	2	5.452	2.765	.066
8. Quality of packing is good for the product	4.676	2	2.338	1.149	.320
9. Lack of communication is a barrier in marketing	5.301	2	2.650	1.469	.234
10. Skilled marketing persons are availed for the business	.148	2	.074	.037	.964

Source: (Primary data)

The computed value is greater than 0.05 for all the items, the null hypothesis is accepted, hence there is no significant difference in opinion for issues related to marketing with respect to business type.

4.4.8. Post-Production: Marketing Issues and No. of Employees

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to marketing with respect to number of employees.

The null hypothesis is that there is no significant difference in opinion for issues related to Marketing with respect to number of Employees.

65

Table No. 4.39: Marketing Issues and No. of Employees

ANOVA: Marketing Issues and No. of Employees

No. of Employees	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	4.625	3	1.542	.866	.461
2. Substitute products affect marketing of the product	10.839	3	3.613	2.768	.044
3. Marketing strategy of competitors affects products or business	16.392	3	5.464	2.912	.037
4. There is demand for the product in market always	4.121	3	1.374	.758	.519
5. Branding is a barrier in marketing of the products	5.151	3	1.717	.843	.472
6. Product price is affordable to the customers	2.743	3	.914	.472	.702
7. Our product need more promotion	12.138	3	4.046	2.052	.109
8. Quality of packing is good for the product	1.871	3	.624	.306	.821
9. Lack of communication is a barrier in marketing	2.159	3	.720	.399	.754
10. Skilled marketing persons are availed for the business	1.727	3	.576	.288	.834

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to marketing with respect to number of employees.

But, for the items 2 [Substitute products affect marketing of the product, Marketing strategy of competitors affects products or business] the estimated value is less than 0.05 the null hypothesis is rejected that is there is significant difference in opinion for issues related to marketing with respect to number of employees.

4.4.9. Post-Production: Marketing Issues and Annual Turnover

The ANOVA test was used to identify whether there is significant difference in opinion for issues related to marketing with respect to annual turnover.

The null hypothesis is that there is no significant difference in opinion for issues related to marketing with respect to annual turnover.

Table No. 4.40: Marketing Issues and Annual Turnover

ANOVA: Marketing Issues and Annual Turnover

Annual Turnover	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Marketing the products is difficult in our business	.865	2	.432	.243	.785
2. Substitute products affect marketing of the product	3.621	2	1.811	1.387	.253
3. Marketing strategy of competitors affects products or business	4.330	2	2.165	1.154	.318
4. There is demand for the product in market always	.285	2	.142	.079	.925
5. Branding is a barrier in marketing of the products	.990	2	.495	.243	.784
6. Product price is affordable to the customers	.536	2	.268	.139	.871
7. Our product need more promotion	2.963	2	1.482	.751	.474
8. Quality of packing is good for the product	1.075	2	.538	.264	.768
9. Lack of communication is a barrier in marketing	10.128	2	5.064	2.807	.064
10. Skilled marketing persons are availed for the business	10.450	2	5.225	2.615	.077

Source: (Primary data)

The computed value is greater than 0.05 for all the items meaning, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to marketing with respect to annual turnover.

4.4.10. Rank Analysis: Marketing Issue

Herein rank analysis was carried to identify the important issues associated with marketing of Jasmine trade.

Table No. 4.41: Rank Analysis: Marketing Issue

Rank Analysis: Marketing Issue

Rank Analysis: Marketing Issue	Mean	Rank
1. Marketing the products is difficult in our business	3.6584	2
2. Substitute products affect marketing of the product	3.6957	1
3. Marketing strategy of competitors affects products or business	2.8137	10
4. There is demand for the product in market always	3.1242	4
5. Branding is a barrier in marketing of the products	2.9627	7
6. Product price is affordable to the customers	2.8820	9
7. Our product need more promotion	3.1491	3
8. Quality of packing is good for the product	3.0994	5
9. Lack of communication is a barrier in marketing	2.9689	6
10. Skilled marketing persons are availed for the business	2.9441	8

Source: (Primary data)

From the Table 4.41, it was found through mean score that substitute products affect marketing of the product stood the first rank. Moreover the last five ranks are given below to assess the significance are;

1. Marketing strategy of competitors affects products or business
2. Product price is not affordable to the customers
3. Skilled marketing persons are availed for the business
4. Branding is a barrier in marketing of the products
5. Lack of communication is a barrier in marketing

4.4.11. Post-Production: Logistic and Transportation Issues and Gender

The Independent Sample test was applied to identify whether there is significant difference in opinion for issues related to Logistics with respect to gender.

The null hypothesis is that there is no significant difference in opinion for issues related to logistics with respect to gender.

68

Table No. 4.42: Logistic and Transportation Issues and Gender

Independent Sample T Test: Logistic and Transportation Issues and Gender

Gender	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	4.993	1	4.993	2.676	.104
2. Road facilities and connectivity are essential to our business	2.313	1	2.313	1.427	.234
3. Road facilities are stable at all times	.092	1	.092	.048	.826
4. Rail transportation is easy to access for goods transport	.136	1	.136	.071	.790
5. Shipping and airports are easy to access for exporting	4.499	1	4.499	2.091	.150
6. Having enough warehouse facilities	.494	1	.494	.224	.637
7. Cold storage facility is one of the challenges of our business sustainability	.274	1	.274	.146	.703

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to logistics and transportation with respect to gender.

4.4.12. Post-Production: Logistic and Transportation Issues and Age

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to logistics with respect to age.

The null hypothesis is that there is no significant difference in opinion for issues related to logistics with respect to age.

69

Table No. 4.43: Logistic and Transportation Issues and Age

ANOVA: Logistic and Transportation Issues and Age

Age	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	4.654	3	1.551	.831	.479
2. Road facilities and connectivity are essential to our business	1.299	3	.433	.267	.849
3. Road facilities are stable at all times	5.858	3	1.953	1.024	.384
4. Rail transportation is easy to access for goods transport	1.564	3	.521	.272	.845
5. Shipping and airports are easy to access for exporting	.613	3	.204	.095	.963
6. Having enough warehouse facilities	1.720	3	.573	.259	.854
7. Cold storage facility is one of the challenges of our business sustainability	.367	3	.122	.065	.978

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to logistic with respect to age.

4.4.13. Post-Production: Logistic and Transportation Issues and Marital Status

The Independent Sample test was employed to identify whether there is significant difference in opinion for issues related to logistics with respect to marital status.

The null hypothesis is that marital status does not influence the logistic and transport issue.

Table No. 4.44: Logistic and Transportation Issues and Martial Status

Independent Sample T Test: Logistic and Transportation Issues and Marital Status

Marital Status	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	.983	1	.983	.527	.469
2. Road facilities and connectivity are essential to our business	1.072	1	1.072	.661	.417
3. Road facilities are stable at all times	.202	1	.202	.106	.745
4. Rail transportation is easy to access for goods transport	6.650	1	6.650	3.471	.065
5. Shipping and airports are easy to access for exporting	.470	1	.470	.218	.641
6. Having enough warehouse facilities	.103	1	.103	.047	.829
7. Cold storage facility is one of the challenges of our business sustainability	5.254	1	5.254	2.801	.096

Source: (Primary data)

Since the calculated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to logistic with respect to marital status.

4.4.14. Post-Production: Logistic and Transportation Issues and Experience

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to logistics with respect to experience.

The null hypothesis is that there is no significant difference in opinion for issues related to logistics with respect to experience.

Table No. 4.45: Logistic and Transportation Issues and Experience

ANOVA: Logistic and Transportation Issues and Experience

Experience	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	6.977	3	2.326	1.246	.295
2. Road facilities and connectivity are essential to our business	1.128	3	.376	.232	.874
3. Road facilities are stable at all times	3.095	3	1.032	.541	.655
4. Rail transportation is easy to access for goods transport	5.953	3	1.984	1.036	.379
5. Shipping and airports are easy to access for exporting	.495	3	.165	.077	.972
6. Having enough warehouse facilities	17.304	3	5.768	2.610	.054
7. Cold storage facility is one of the challenges of our business sustainability	1.390	3	.463	.247	.863

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to logistic with respect to experience.

4.4.15. Post-Production: Logistic and Transportation Issues and Generation of Business

The ANOVA test was employed to identify whether there is significant difference in opinion for issues related to logistics with respect to generation of business.

The null hypothesis is that generation of business do not influence the logistics and transportation issue.

Table No. 4.46: Logistic and Transportation Issues and Generation of Business

ANOVA: Logistic and Transportation Issues and Generation of Business

Generation of business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	2.128	2	1.064	.570	.567
2. Road facilities and connectivity are essential to our business	.653	2	.326	.201	.818
3. Road facilities are stable at all times	2.612	2	1.306	.685	.506
4. Rail transportation is easy to access for goods transport	10.194	2	5.097	2.660	.074
5. Shipping and airports are easy to access for exporting	5.143	2	2.572	1.195	.306
6. Having enough warehouse facilities	.900	2	.450	.204	.816
7. Cold storage facility is one of the challenges of our business sustainability	2.414	2	1.207	.643	.527

Source: (Primary data)

The estimated value is greater than 0.05 for all the items meaning, the null hypothesis is accepted there is no significant difference between the logistic issues and generation of business.

4.4.16. Post-Production: Logistic and Transportation Issues and Location of Business

The Independent Sample test has been applied to identify whether there is significant difference in opinion for issues related to logistics with respect to location of business.

The null hypothesis is that there is no significant difference in opinion for issues related to logistics with respect to location of business.

73

Table No. 4.47: Logistic and Transportation Issues and Location of Business

Independent Sample T Test: Logistic and Transportation Issues and Location of Business

Location of Business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	6.125	1	6.125	3.283	.072
2. Road facilities and connectivity are essential to our business	7.356	1	7.356	4.537	.035
3. Road facilities are stable at all times					
4. Rail transportation is easy to access for goods transport	3.080	1	3.080	1.614	.206
5. Shipping and airports are easy to access for exporting	7.276	1	7.276	3.798	.053
	1.105	1	1.105	.514	.475
6. Having enough warehouse facilities	.968	1	.968	.438	.509
7. Cold storage facility is one of the challenges of our business sustainability	10.490	1	10.490	5.592	.019

Source: (Primary data)

Since, the estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to logistic with respect to location of business.

But, for the items 2 and 7 [Road facilities and connectivity are essential to our business, Cold storage facility is one of the challenges of our business sustainability] the estimated significance value is less than 0.05 for the following items meaning, the null hypothesis is rejected that is there is significant difference in opinion for issues related to logistic with respect to location of business.

4.4.17. Post-Production: Logistic and Transportation Issues and Business Type

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to logistics with respect to business type.

The null hypothesis is that there is no significant difference in opinion for issues related to logistics with respect to business type.

74

Table No. 4.48: Logistic and Transportation Issues and Business Type

ANOVA: Logistic and Transportation Issues and Business Type

Business Type	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	8.010	2	4.005	2.146	.121
2. Road facilities and connectivity are essential to our business	1.175	2	.587	.362	.697
3. Road facilities are stable at all times	1.381	2	.691	.362	.697
4. Rail transportation is easy to access for goods transport	8.897	2	4.448	2.322	.102
5. Shipping and airports are easy to access for exporting	1.413	2	.707	.328	.721
6. Having enough warehouse facilities	2.964	2	1.482	.671	.513
7. Cold storage facility is one of the challenges of our business sustainability	6.618	2	3.309	1.764	.175

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items meaning, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to logistic with respect to business type.

4.4.18. Post-Production: Logistic and Transportation Issues and No. of Employees

The ANOVA test was applied to identify whether there is significant difference in opinion for issues related to logistics with respect to number of employees.

The null hypothesis is that there is no significant difference between the logistics issues respect to number of employees.

75

Table No. 4.49: Logistic& Transportation Issues and No. of Employees

ANOVA: Logistic and Transportation Issues and No. of Employees

No. of Employees	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	.325	3	.108	.058	.982
2. Road facilities and connectivity are essential to our business	1.849	3	.616	.380	.767
3. Road facilities are stable at all times	6.347	3	2.116	1.109	.348
4. Rail transportation is easy to access for goods transport	2.483	3	.828	.432	.730
5. Shipping and airports are easy to access for exporting	4.973	3	1.658	.771	.512
6. Having enough warehouse facilities	1.475	3	.492	.223	.881
7. Cold storage facility is one of the challenges of our business sustainability	2.212	3	.737	.393	.758

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to logistic with respect to number of employees.

4.4.19. Post-Production: Logistic and Transportation Issues and Annual Turnover

The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to logistics with respect to annual turnover.

The null hypothesis is that there is no significant difference between logistics and annual turnover.

76

Table No. 4.50: Logistic& Transportation Issues and Annual Turnover

ANOVA: Logistic and Transportation Issues and Annual Turnover					
Annual Turnover	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Transport facilities are available readily	5.190	2	2.595	1.391	.252
2. Road facilities and connectivity are essential to our business	.820	2	.410	.253	.777
3. Road facilities are stable at all times	4.335	2	2.168	1.136	.324
4. Rail transportation is easy to access for goods transport	.327	2	.163	.085	.918
5. Shipping and airports are easy to access for exporting	3.508	2	1.754	.815	.445
6. Having enough warehouse facilities	3.600	2	1.800	.815	.445
7. Cold storage facility is one of the challenges of our business sustainability	4.058	2	2.029	1.082	.342

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to logistic with respect to annual turnover.

4.4.20. Rank Analysis: Logistic and Transportation Issues

Herein rank analysis was carried to identify the important issues associated with Logistics in Jasmine trade.

77

Table No. 4.51: Rank Analysis: Logistic & Transportation Issues

Rank Analysis: Logistic & Transportation Issues	Mean	Rank
1. Transport facilities are available readily	3.5217	2
2. Road facilities and connectivity are essential to our business	3.6894	1
3. Road facilities are stable at all times	3.0497	3
4. Rail transportation is easy to access for goods transport	2.9814	5
5. Shipping and airports are easy to access for exporting	2.8882	7
6. Having enough warehouse facilities	3.0000	4
7. Cold storage facility is one of the challenges of our business sustainability	2.9317	6

Source: (Primary data)

The ranks are assigned based on the mean scores. Table 4.51 shows the rank analysis in connection with logistics issues. The researcher has shown the last and least three ranks which are as follows;

1. Shipping and airports are not easy to access for exporting
2. Cold storage facility is one of the challenges of our business sustainability
3. Rail transportation is not easy to access for goods transport

4.4.21. Post-Production: Profitability Issues and Gender

Profitability is the ratio of return to investment. It becomes a big issue for its survival. The gender and profitability have some correlation especially the jasmine entrepreneur. The Independent Sample 't' test was carried out to identify whether there is significant difference in opinion for issues related to Profitability with respect to Gender.

The null hypothesis is that gender does not influence the profitability.

78

Table No. 4.52: Profitability Issues and Gender
Independent Sample T Test: Profitability Issues and Gender

Gender	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Competitors play a significant role in the profitability of our business	.071	1	.071	.032	.859
2. Interest rate of loan influences profitability of business	5.018	1	5.018	2.594	.110
3. Capital Strength of business increases our profitability	4.477	1	4.477	1.866	.174
4. Size of the business affects the profit	.930	1	.930	.470	.494

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items meaning, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to profitability with respect to gender.

4.4.22. Post-Production: Profitability Issues and Age

The age and profitability have same relationship. In order to know it, the ANOVA test has been applied. The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to Profitability with respect to Age.

The null hypothesis is that there is no significant difference in opinion for issues related to profitability with respect to age.

Table No. 4.53: Profitability Issues and Age
ANOVA: Profitability Issues and Age

Age	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Competitors play a significant role in the profitability of our business	1.073	3	.358	.159	.924
2. Interest rate of loan influences profitability of business	1.291	3	.430	.222	.881
3. Capital Strength of business increases our profitability	8.265	3	2.755	1.148	.332
4. Size of the business affects the profit	14.745	3	4.915	2.484	.063

Source: (Primary data)

79

Since, the calculated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to profitability with respect to age.

4.4.23. Post-Production: Profitability Issues and Marital Status

The Independent Sample test was applied to identify whether there is significant difference in opinion for issues related to profitability with respect to marital status.

The null hypothesis is that there is no significant difference between the profitability and marital status.

Table No. 4.54: Profitability Issues and Marital Status

Independent Sample T Test: Profitability Issues and Marital Status					
Marital Status	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1. Competitors play a significant role in the profitability of our business	.035	1	.035	.016	.901
2. Interest rate of loan influences profitability of business	1.425	1	1.425	.737	.392
3. Capital Strength of business increases our profitability	6.726	1	6.726	2.804	.096
4. Size of the business affects the profit	.001	1	.001	.001	.979

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to profitability with respect to marital status.

4.4.24. Post-Production: Profitability Issues and Experience

The ANOVA test was used to identify whether there is significant difference in opinion for issues related to profitability with respect to experience.

The null hypothesis is that the experience does not influence the profitability.

80

Table No. 4.55: Profitability Issues and Experience

ANOVA: Profitability Issues and Experience

Experience	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Competitors play a significant role in the profitability of our business	1.790	3	.597	.265	.851
2. Interest rate of loan influences profitability of business	4.496	3	1.499	.775	.510
3. Capital Strength of business increases our profitability	1.106	3	.369	.154	.927
4. Size of the business affects the profit	11.238	3	3.746	1.893	.134

Source: (Primary data)

The estimated value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to profitability with respect to experience.

4.4.25. Post-Production: Profitability Issues and Generation of Business

The ANOVA test was used to identify whether there is significant difference in opinion for issues related to profitability with respect to generation of business.

The null hypothesis is that generation of business does not influence the profitability of the entrepreneurs.

Table No. 4.56: Profitability Issues and Generation of Business

ANOVA: Profitability Issues and Generation of Business

Generation of business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Competitors play a significant role in the profitability of our business	7.482	2	3.741	1.660	.194
2. Interest rate of loan influences profitability of business	1.103	2	.551	.285	.752
3. Capital Strength of business increases our profitability	1.615	2	.808	.337	.715
4. Size of the business affects the profit	.981	2	.490	.248	.781

Source: (Primary data)

81

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted and there is no significant difference in opinion for issues related to profitability with respect to generation of business.

4.4.26. Post-Production: Profitability Issues and Location of Business

The Independent Sample test has been used to identify whether there is significant difference in opinion for issues related to profitability with respect to location of business.

The null hypothesis is that there is no significant difference between profitability and location of business.

Table No.4.57: Profitability Issues and Location of Business

Independent Sample T Test: Profitability Issues and Location of Business					
Location of Business	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Competitors play a significant role in the profitability of our business	.027	1	.027	.012	.912
2. Interest rate of loan influences profitability of business	1.548	1	1.548	.800	.373
3. Capital Strength of business increases our profitability	.528	1	.528	.220	.640
4. Size of the business affects the profit	1.666	1	1.666	.842	.360

Source: (Primary data)

The estimated value is greater than 0.05 for all the items; the null hypothesis is accepted that is there is no significant difference between profitability and location of business.

4.4.27. Post-Production: Profitability Issues and Business Type

Profitability depends on the types of business. The ANOVA test was carried out to identify whether there is significant difference in opinion for issues related to profitability with respect to business type.

The null hypothesis is that there is no significant difference between profitability and business type.

82

Table No. 4.58: Profitability Issues and Business Type

ANOVA: Profitability Issues and Business Type					
Business Type	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Competitors play a significant role in the profitability of our business	.525	2	.262	.116	.890
2. Interest rate of loan influences profitability of business	3.340	2	1.670	.863	.424
3. Capital Strength of business increases our profitability	1.222	2	.611	.255	.775
4. Size of the business affects the profit	1.031	2	.515	.260	.771

Source: (Primary data)

Since, the estimated value is greater than 0.05 for all the items, the null hypothesis is accepted, hence there is no significant difference in opinion for issues related to profitability with respect to business type.

4.4.28. Post-Production: Profitability Issues and No. of Employees

The ANOVA test was applied to identify whether there is significant difference in opinion for issues related to profitability with respect to number of employees.

The null hypothesis is that there is no significant difference between profitability and number of employees.

Table No. 4.59: Profitability Issues and No. of Employees

ANOVA: Profitability Issues and No. of Employees					
No. of Employees	Type III Sum of Squares	df	Mean Square	F	Sig.
1. Competitors play a significant role in the profitability of our business	3.217	3	1.072	.476	.700
2. Interest rate of loan influences profitability of business	12.447	3	4.149	2.145	.097
3. Capital Strength of business increases our profitability	2.962	3	.987	.412	.745
4. Size of the business affects the profit	.456	3	.152	.077	.972

Source: (Primary data)

83

The estimated value is greater than 0.05 for all the items; the null hypothesis is accepted that is there is no significant difference between profitability and number of employees.

4.4.29. Post-Production: Profitability Issues and Annual Turnover

Profit generally depends on turnover. The ANOVA test was used to identify whether there is significant difference between profitability and annual turnover. The null hypothesis is that there is no significant difference between profitability and annual turnover.

Table No. 4.60: Profitability Issues and Annual Turnover

ANOVA: Profitability Issues and Annual Turnover					
Annual Turnover	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1. Competitors play a significant role in the profitability of our business	2.220	2	1.110	.493	.612
2. Interest rate of loan influences profitability of business	4.612	2	2.306	1.192	.307
3. Capital Strength of business increases our profitability	7.464	2	3.732	1.556	.215
4. Size of the business affects the profit	2.597	2	1.299	.656	.520

Source: (Primary data)

The estimated significance value is greater than 0.05 for all the items, the null hypothesis is accepted that is there is no significant difference in opinion for issues related to profitability with respect to annual turnover.

4.4.30. Rank Analysis: Profitability Issues

Herein rank analysis was carried to identify the important issues associated with profitability in Jasmine trade.

84

Table No. 4.61: Rank Analysis: Profitability Issues

Profitability Issues	Mean	Rank
1. Competitors play a significant role in the profitability of our business	3.2050	1
2. Interest rate of loan influences profitability of business	3.0248	3
3. Capital Strength of business increases our profitability	3.1863	2
4. Size of the business affects the profit	2.9689	4

Source: (Primary data)

Table 4.61 shows the mean score and rank. For the highest mean score the first rank is given followed by other ranks. The least three ranks are given based on the mean scores.

1. Size of the business affects the profit
2. Interest rate of loan influences profitability of business
3. Capital Strength of business increases our profitability

SECTION-D

4.5. Relationship of Pre-Production on Post-Production

Herein Correlation analysis was carried out to identify level of relationship between Pre-Production and Post-Production.

The null hypothesis is that There is no significant relationship between Pre-Production and Post-Production.

Table No. 4.62: Relationship of Pre-Production on Post-Production

Correlations		Preproduction	Postproduction
Preproduction	Pearson Correlation	1	.244
	Sig. (2-tailed)		.049
	N	161	161
Postproduction	Pearson Correlation	.244	1
	Sig. (2-tailed)	.049	
	N	161	161

Source: (Primary data)

85

The estimated significance value is less than 0.05 for all the items; the null hypothesis is rejected that is there is significant relationship between Pre-Production and Post-Production.

4.5.1. Impact of Pre-Production on Post-Production

The correlation analysis was carried out to identify impact of relationship between Pre-Production on Post-Production.

The null hypothesis is that there is no significant impact of Pre-Production on Post-Production.

Table No. 4.63: Impact of Pre-Production on Post-Production

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.244[a]	.059	.015	.33106

a. Predictors: (Constant), preproduction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.368	1	.368	3.360	0.009
	Residual	17.426	159	.110		
	Total	17.795	160			

a. Dependent Variable: PostProduction
b. Predictors: (Constant), PreProduction

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.603	.286		9.094	.000
	PreProduction	.165	.090	.144	1.833	.049

a. Dependent Variable: Post Production
Source: (Primary data)

The R value is 0.244 which mean there is a moderate (24.4 Percent) relationship between the two concepts the estimated ANOVA value is 0.009 which is less than 0.05 which means the model is fit.

Also the estimated coefficient significance is less than 0.05 hence, the null hypothesis is rejected that is there is significant impact of Pre-Production on Post-Production.

Conclusion:

In this chapter, the researcher has analysed the demographic profile of the respondent's raw material issues, financial issues, and human resource issues under pre-production, marketing issues, logistics and transport issues and profitability issues by using independent sample 't' test, ANOVA test and simple percentage analysis.

CHAPTER V

FINDINGS, SUGGESTIONS, CONCLUSION AND SCOPE FOR FURTHER RESEARCH

CHAPTER – V

FINDINGS, SUGGESTIONS AND CONCLUSIONS

5.1. INTRODUCTION

This study explains the findings, suggestions and conclusion of the study.

5.2 FINDINGS

Demographic Profile

1. **Gender:** From the percentage analysis, it was found that out of 161 respondents considered for the study 157 [97.5 Percent] were male and remaining 4 [2.5 Percent] were female.

2. **Age:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 5 [3.1 Percent] of the respondents are below 25 years, 12 [7.5 Percent] of the respondents are between 25-35 years, 96 [59.6 Percent] of the respondents are between 35-45 years, 31 [19.3 Percent] of the respondents are between 45-55 years and 17 [10.6 Percent] of the respondents are above 55 years.

3. **Marital Status:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 148 [91.9 Percent] of the respondents are married, and 13 [8.1 Percent] of the respondents are unmarried.

4. **Experience:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 29 [18 Percent] of the respondents has below 5 years' experience, 84 [52.2 Percent] of the respondents has 5-10 years' experience, 30 [18.6 Percent] of the respondents has 10-15 years' experience, 12 [7.5 Percent] of the respondents has 15-20 years' of experience and 6 [3.7 Percent] of the respondents has above 20 years' of experience.

5. **Generation of Business:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 125 [77.6 Percent] of the respondents are 1st generation Jasmine traders, 31 [19.3 Percent] are 2nd generation Jasmine Traders and 5 [3.7 Percent] of the respondents are 3rd generation Jasmine Traders.

6. **Location of Business:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 149 [92.5 Percent] of the

88

respondents are from Urban area and 12 [7.5 Percent] of the respondents are from Rural area.

7. **Business Type:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 3 [1.9 Percent] respondents are manufacturers, 31 [19.3 Percent] respondents are whole sellers, 30 [18.6 Percent] are distributors and 97 [60.2 Percent] are retailers.

8. **No. of Employees:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 128 [79.5 Percent] respondents has below 10 employees, 17 [10.6 Percent] respondents has 10-15 employees, 8 [5 Percent] respondents has 15-20 employees, 6 [3.7 Percent] respondents has 20-25 employees and 2 [1.2 Percent] respondents has above 25 employees.

9. **Annual Turnover:** From the percentage analysis, it was found that out of 161 respondents considered for the study; 149 [92.5 Percent] respondents has annual turnover below 5 lakhs, 9 [5.6 Percent] respondents has annual turnover between 5-10 lakhs, 1 [0.6 Percent] respondents has annual turnover between 10-20 lakhs and 1 [0.6 Percent] respondents has annual turnover between 20-50 lakhs, 1 [0.6 Percent] respondents has annual turnover above 50 lakhs.

Objective – 2: Pre Productions Issues

Raw Material Issues

1. There is no significant difference in opinion for issues related to raw material with respect to gender.

2. There is no significant difference in opinion for issues related to raw material with respect to Age.

3. There is no significant difference in opinion for issues related to raw material with respect to Martial Status. But, for the items 3[Raw materials are available in different varieties] there is significant difference in opinion for issues related to raw material with respect to Martial Status.

4. There is no significant difference in opinion for issues related to raw material with respect to Experience. But, for the items 5 [Price of raw material affects availability of raw material] there is no significant difference in opinion for issues related to raw material with respect to Experience.

89

5. There is no significant difference in opinion for issues related to raw material with respect to Generation of Business.

6. There is no significant difference in opinion for issues related to raw material with respect to Location of Business. But, for the items 5 [Price of raw material affects availability of raw material] there is no significant difference in opinion for issues related to raw material with respect to Location of Business.

7. There is no significant difference in opinion for issues related to raw material with respect to Location of Business. But, for the items 8 [Raw material perishability is a serious issue] there is no significant difference in opinion for issues related to raw material with respect to Location of Business.

8. There is no significant difference in opinion for issues related to raw material with respect to No. of Employees.

9. There is no significant difference in opinion for issues related to raw material with respect to Annual Turnover.

   a. From the Rank analysis carried out using the mean score illustrate the following as the important issues associated with raw material in Jasmine trade.

      i. Good Quality raw materials are not available from nearby places

      ii. All grades of raw material cannot be availed on time

      iii. Raw material perishability is a serious issue

Financial Issues

1. There is no significant difference in opinion for issues related to Finance with respect to Gender.

2. There is no significant difference in opinion for issues related to Finance with respect to Age.

3. There is no significant difference in opinion for issues related to Finance with respect to Marital Status.

4. There is no significant difference in opinion for issues related to Finance with respect to Experience.

5. There is no significant difference in opinion for issues related to Finance with respect to Generation of Business. But, for the items 3 [Have got benefits of

government subsidies] there is significant difference in opinion for issues related to Finance with respect to Generation of Business.

6. There is no significant difference in opinion for issues related to Finance with respect to Generation of Business.

7. There is no significant difference in opinion for issues related to Finance with respect to Business Types. But, for the items 6 [Advance payments to the farmers for business are difficult] There is significant difference in opinion for issues related to Finance with respect to Business Types.

8. There is no significant difference in opinion for issues related to Finance with respect to No. of Employees.

9. There is no significant difference in opinion for issues related to Finance with respect to Annual Turnover.

   a. From the Rank analysis carried out using the mean score illustrate the following as the important issues associated with Finance in Jasmine trade.

      i. Have not got benefits of government subsidies

      ii. Delay in payments from customers affects business sustainability

      iii. Foreign exchange rate affects business sustainability

      iv. Interest rates of loan affects the business

      v. Advance payments to the farmers for business are difficult.

Human Resource Issues

1. There is no significant difference in opinion for issues related to Human Resource with respect to Gender.

2. There is no significant difference in opinion for issues related to Human Resource with respect to Age. But, for the items 5[Income/ salary to the labor] there is significant difference in opinion for issues related to Human Resource with respect to Age.

3. There is no significant difference in opinion for issues related to Human Resource with respect to Marital Status.

4. There is no significant difference in opinion for issues related to Human Resource with respect to Experience.

5. There is no significant difference in opinion for issues related to Human Resource with respect to Generation of Business.

6. There is no significant difference in opinion for issues related to Human Resource with respect to Location of Business. But, for the items 5[Income/salary to the labor] there is significant difference in opinion for issues related to Human Resource with respect to Location of Business.

7. There is no significant difference in opinion for issues related to Human Resource with respect to Business Types.

8. There is no significant difference in opinion for issues related to Human Resource with respect to No. of Employees.

9. There is no significant difference in opinion for issues related to Human Resource with respect to Annual Turnover.

    a. From the Rank analysis carried out using the mean score illustrate the following as the important issues associated with Human Resource in Jasmine trade.

        i. Providing training to labor

        ii. Non Availability of alternate/substitute labor

        iii. Income/ salary to the labor

Objective – 3: Post-Production Issues

Marketing Issues

1. There is no significant difference in opinion for issues related to Marketing with respect to Gender.

2. There is no significant difference in opinion for issues related to Marketing with respect to Age. But, for the item 3 [Marketing strategy of competitors affects products or business] there is significant difference in opinion for issues related to Marketing with respect to Age.

3. There is no significant difference in opinion for issues related to Marketing with respect to Marital Status.

4. There is no significant difference in opinion for issues related to Marketing with respect to Experience. But, for the item 3 [Our Product need more promotion] there is significant difference in opinion for issues related to Marketing with respect to Experience.

5. There is no significant difference in opinion for issues related to Marketing with respect to Generation of Business.

6. There is no significant difference in opinion for issues related to Marketing with respect to Location of Business.

7. There is no significant difference in opinion for issues related to Marketing with respect to Business Type.

8. There is no significant difference in opinion for issues related to Marketing with respect to No. of Employees. But, for the items 2 [Substitute products affect marketing of the product, Marketing strategy of competitors affects products or business] there is significant difference in opinion for issues related to Marketing with respect to No. of Employees.

9. There is no significant difference in opinion for issues related to Marketing with respect to Annual Turnover.

   a. From the Rank analysis carried out using the mean score illustrate the following as the important issues associated with marketing of Jasmine trade are;

      i. Marketing strategy of competitors affects products or business
      ii. Product price is not affordable to the customers
      iii. Skilled marketing persons are availed for the business
      iv. Branding is a barrier in marketing of the products
      v. Lack of communication is a barrier in marketing

Logistics and Transportation Issues

1. There is no significant difference in opinion for issues related to Logistic and Transportation with respect to Gender.

2. There is no significant difference in opinion for issues related to Logistic with respect to Age.

3. There is no significant difference in opinion for issues related to Logistic with respect to Marital Status.

4. There is no significant difference in opinion for issues related to Logistic with respect to Experience.

5. There is no significant difference in opinion for issues related to Logistic with respect to Generation of Business.

93

6. There is no significant difference in opinion for issues related to Logistic with respect to Location of Business. But, for the items 2 and 7 [Road facilities and connectivity are essential to our business, Cold storage facility is one of the challenges of our business sustainability] there is significant difference in opinion for issues related to Logistic with respect to Location of Business.

7. There is no significant difference in opinion for issues related to Logistic with respect to Business Type.

8. There is no significant difference in opinion for issues related to Logistic with respect to No. of Employees.

9. There is no significant difference in opinion for issues related to Logistic with respect to Annual Turnover.

   a. From the Rank analysis carried out using the mean score illustrate the following as the important issues associated with Logistic of Jasmine trade are;

      i. Shipping and airports are not easy to access for exporting

      ii. Cold storage facility is one of the challenges of our business sustainability

      iii. Rail transportation is not easy to access for goods transport

Profitability Issues

1. There is no significant difference in opinion for issues related to profitability with respect to gender.

2. There is no significant difference in opinion for issues related to profitability with respect to Age.

3. There is no significant difference in opinion for issues related to profitability with respect to Marital Status.

4. There is no significant difference in opinion for issues related to profitability with respect to experience.

5. There is no significant difference in opinion for issues related to profitability with respect to generation of Business.

6. There is no significant difference in opinion for issues related to profitability with respect to Location of Business.

7. There is no significant difference in opinion for issues related to profitability with respect to business type.

94

8. There is no significant difference in opinion for issues related to profitability with respect to No. of Employees.

9. There is no significant difference in opinion for issues related to profitability with respect to Annual Turnover.

   a. From the Rank analysis carried out using the mean score illustrate the following as the important issues associated with Profitability of Jasmine trade are;

      i. Size of the business affects the profit

      ii. Interest rate of loan influences profitability of business

      iii. Capital Strength of business increases our profitability

Objective – 4: Relationship of Pre-Production on Post-Production

Relationship of Pre-Production on Post-Production

1. There is significant relationship between Pre-Production and Post-Production.

   a. There is significant impact of Pre-Production and Post-Production. The regression equation governing Pre-Production and Post-Production is:

      i. Post-Production $= 2.603 + (0.165 \times$ Pre-Production$)$

5.2. Suggestions

From the analysis made it can be interpreted that most of the Jasmine trader in Karaikudi region faces similar problems. It is because from the analysis conducted, it was found that there is no significant difference in opinion related to pre-production and post post-production issues.

1. During the study many respondents indicate following as the important issues associated with raw materials; good quality raw materials are not available from nearby places, All grades of raw material cannot be availed on time and raw material perish ability is a serious issue.

   Hereby to resolve this issues, it is suggested to government to make initiation to sanction barren lands in and around Karaikudi region for the purpose of cultivation of Jasmine for the beneficial of trader. Also, it is suggested to trader to expand their business vertically so, that they would also produce Jasmine instead of simply retailing of whole selling it.

2. Through the study conducted it was found that Jasmine traders have following financial issues namely; They have not got benefits of government subsidies, Delay in payments from customers affects business sustainability, Foreign exchange rate affects business sustainability, Interest rates of loan affects the business and advance payments to the farmers for business are difficult.

Therefore, it is suggested to government to frame suitable policies and provide interest free loans also to take immediate action for the complaints raised against payment by Jasmine traders.

3. The important issues associated with human resource was found to be; Providing training to labour, non availability of alternate/substitute labour and Income/ salary to the labour. Through analysis performed following marketing issues were identified namely; Marketing strategy of competitors affecting products or business, Product price is not affordable to the customers, Skilled marketing persons are availed for the business, branding is a barrier in marketing of the products and lack of communication is a barrier in marketing.

Hereby, it is suggested to Jasmine traders of Karaikudi to initiate an association and form a training centre in Karaikudi to provide significant training and generate more number of employees.

4. During Post-Production many of the Jasmine traders found to face many logistic issues which are; Shipping and airports are not easy to access for exporting, Cold storage facility is one of the challenges of our business sustainability and rail transportation is not easy to access for goods transport.

Thereby, it is suggested to Government to form a Special Economic Zone in Karaikudi region for benefit of many domestic and export traders especially Jasmine.

5.3. Conclusion

The study was conducted with 161 Jasmine trader in Karaikudi region. For the purpose of study descriptive research design was adopted. To collect the data structured questionnaire was used, the questionnaire was structured as per the objective framed for the study. Snowball sampling technique was used for the purpose of study. From the analysis made it can be interpreted that most of the Jasmine trader in Karaikudi region faces similar problems. It is because from the analysis conducted,

96

it was found that there is no significant difference in opinion related to pre-production and post post-production issues. During the study many respondent indicates following as the important issues associated with raw materials; good quality raw materials are not available from nearby places, all grades of raw material cannot be availed on time and Raw material perishability is a serious issue. Also through the study conducted it was found that Jasmine traders have following financial issues namely; They have not got benefits of government subsidies, delay in payments from customers affects business sustainability, foreign exchange rate affects business sustainability, interest rates of loan affects the business and advance payments to the farmers for business are difficult.

The important issues associated with human resource was found to be; providing training to labour, non availability of alternate/substitute labour and Income/ salary to the labor. Through analysis performed following marketing issues were identified namely; marketing strategy of competitors affecting products or business, product price is not affordable to the customers, skilled marketing persons are availed for the business, branding is a barrier in marketing of the products and lack of communication is a barrier in marketing. During Post-Production many of the Jasmine traders found to face many logistic issues which are; Shipping and airports are not easy to access for exporting, Cold storage facility is one of the challenges of our business sustainability and Rail transportation is not easy to access for goods transport.

Scope for Further research

1. The study can be extended to the whole of Tamilnadu for a better perception of Jasmine export issues.

2. The futuristic prospects of Jasmine export in terms of Quantity and income earned could be studied.

3. With a significant sample size of more than 400, models could be constructed and problems faced by the exporter can be better recognized.

4. The study could be extended to the whole of floricultural products in Tamilnadu.

BIBLIOGRAPHY

BIBLIOGRAPHY

I. BOOKS

[1]. Agarwal, A.N., Indian Economy, Vikas Publishing House (P) Ltd., New Delhi. 1986.

[2]. Arkeri, H.R., Indian Agriculture, Oxford and IBM Publishing Co., New Delhi. 1982.

[3]. Bandhawa C.B, and Amitabha Mukhapathyay, Floriculture in India, Allied publishers Private Ltd, New Delhi, 1988.

[4]. Banerjee, P.K., Finance assistance to Small Farmers, Indian Agriculture Economy,Chetna Publications, New Delhi. 1977.

[5]. Bhattacharjee S..k, Naveen kumar P.Surendra kumar, All india co-ordinated research project on floriculture, Indian council of agricultural research, New Delhi.

[6]. Baumer P.T. and Yomey B.S., The Economics of under Development countries, James Niabet and Company Ltd., London. 1951.

[7]. Bhatnagar, S and Chip S.S., Rural Development in India, A Strategy for Socio Economic Changes, Ess Ess Publications, New Delhi. 1987.

[8]. Bunting A.H. (Ed.,), Change in Agriculture, Gerald Duckworth and Co., Ltd., London. 1970.

[9]. Bose & yadav, Naya prakash, editors, Commercial flowers, edited by Calcutta,1st ed, Vistas in All India Co-ordinated research project on floriculture, 1989,

[10]. Chaturvedi, T.N., Rural Development, The Exclusive Horizons, Administrative Changes, V1, New Delhi. 1978.

[11]. Dhingra, I.C., Indian Economy, Sultan Chand & Sons., New Delhi. 1999

[12]. Girija.M., L.Sasikala and Girija V., Introduction to Statistics, Vrinda Publications (P)Ltd., 2004.

[13]. Grewal P.S., Numerical Methods of Statistical Analysis, sterling publishers Pvt. Ltd., New Delhi, 1987, p.555.

[14]. Gupta S.P., Statistical Methods, Sultan Chand & sons Publishers, New Delhi, 1993.

[15]. Hand Book of Agriculture, Indian Council of Agricultural Research, New Delhi, April. 1997. p.626

[16]. John W. Mellor, Rural Development – Principles, Policies and Management, Sage Publications India (P) Ltd. 1969.

[17]. Jindal S.L, Flowering shrubs in India, Bhadra publication division,Nov 1970..

[18]. Kothari C.R, Research methodology, New age international publishers, New Delhi, 2013.

[19]. Kullearni, K.R., Agricultural Marketing in India, The Co-operative Book dept., Bombay. 1966.

[20]. Memoria C.B., Agricultural Problems in India, Kital Mahal, 8th Edn. 1975

[21]. Memoria C.B., Marketing in India, Kital Mahal, 15th Edn, Allanabad,1985.

[22]. Mubadiq Amin sahaf, Marketing of horticulture industry in India, Anmal publications, New Delhi, 1987.

[23]. Parthasarathy, G., Agricultural Development and Small Farmers: A Study of Andhra Pradesh Vikas Publications, New Delhi. 1971.

[24]. Philip Kotler, Principles of Marketing, Prentice Hall of India, New Delhi. 1987.

[25]. Pillai R.S.N. & Bagavathi, Modern Marketing, Sultan & Company Ltd., New Delhi. 1999.

[26]. Flowering plants : Seermegu sakupadi, Madras agricultural students Association, Coimbatore, Sep 1971

[27]. Floriculture: Technology, trades and trend, Prakash.J, phandary K.R.editors. Cultivation of fruits, vegetables and floriculture, NIIR, National Institute of Industrial Research.

[28]. Pyle. P.F., Marketing Principles and Organisations and Policies, M.C. Graw Hill., New York. 1936.

[29]. Ranthawa G.S, amitabha mukhopadhyay, Commercial floriculture floriculture in India, allied publicers, New Delhi, 1st Edition 1986.

[30]. Rauddar Datt and KPM Sundharam, Indian Economy, S.Chand and Co., Ltd., Delhi. 1978.

[31]. Ruddhir Datt, K.P.M., Sundharm, Indian Economy, S.Chand, New Delhi, 2002.

[32]. Sadhu Singh, AN., Fundamentals of Agricultural Economics, Himalayas Publishing House, Bombay, 1985.

[33]. Sankaran S., The Economic Development of India, Progressive Corporation Ltd., Madras. 1976.

[34]. Sankaran, S., Indian Economy, Margham Publications., Chennai. 1997.

[35]. Saravana vel P, Research methodology, kitab mahal, 3 Ed, 1991.

[36]. Singh. A. and Sadhu A.N. Agricultural problems in India, Mumbai : Himalayan Publishing House. 1986.

[37]. Srivastava, Agricultural Economics and Cooperation, Charal and Co., New Delhi. 1971.

[38]. Thiruverkatachari, K., Indian Rural Economics, Sultan Chand & Sons., Delhi. 1967.

[39]. Tripathi P.C, A text book of research methodology in social sciences, Sultan chand & sons,New Delhi,1987.

[40]. Text book of Horticulture, Manibushan Rao.K, Mac Millon, Delhi, 2nd Edition, 2005.

[41]. Vadilal and Dagli, Foundation of Indian Agriculture, Vora and Co., Publishers Pvt. Ltd., Bombay. 1968.

[42]. Varughese., K.V., Indian Economy, Ashish Publishing House., New Delhi. 1993.

II. JOURNALS

[1]. Amirthalingam, M., ―Flower Worship in Tamil Literature, Kissan World, Vol.23, No.6, June 1996, pp.39-40.

[2]. Anoop Kumar et al., ―Horticulture in Controlling Pollution, Kissan World, Vol.25, No.6, June 1998, p.63.

[3]. Ashok. A. ―Liberalisation and Globalisation: Issue in agricultural marketing Southern Economist, February, 2004, pp.5-6.

[4]. Chadha, K.L., et al., ―Role of Horticulture in Controlling Environmental Pollution in Indial, Indian Horticulture, January-March 2001, pp.33-35.

[5]. Evaluation of soft loan scheme for development post-Harvest infrastructure for Horticulture, Agriculture Today, May 2003, pp 95-103.

[6]. Floriculture Industry in Thovalai of Kanyakumari, Kissan World, Vol 38 no12, December2011, P25-28

[7]. Goswami S.N. and Singh S.B., ―Problems and Prospects of Marketing of Horticultural crops in north-East in Indial, Agricultural Marketing, April-June, 2000, pp 23-30.

[8]. H.P.Singh, Harvesting the potential Horticulture, Fertilizer News, February, 2004, p.41.

[9]. Harry Fuller.J. The plant world, (New Delhi: Holt, Rinehart and Washington Inc., 1961), p.300.

[10]. Jairath M.S. and Agarwal W.L. ―Technological changes in agricultural marketing: Some reflectionsl, The Bihar Journal of agricultural marketing, Vol IX. No.2, April-June 2001, pp.178-183.

[11]. Mahalingam.N. ―Pro-active banking system towards faster economic growth, Kissan world, V.30, Feb-2003, pp.5-7.

[12]. Meera Krishna, ―Agricultural Marketing in Bihar: An overview, The Bihar Journal of agricultural Marketing, Vol.IX, No.2, April-June 2001, pp.198-202.

[13]. Money K.S. ―Global Agriculture Trade and role of APEDA, The co-operator (Trade), pp.290-292

[14]. Mohammed Mustaq, —U.S. Floriculture Size, Potential and Prospects, Floriculture Today, Vol.12, No.4, September 2007, pp.98-102.

[15]. Narasimnamurthy.G. and Raji Reddy.K., —Changing Environment of agricultural Marketing India some observationl, Indian Journal of Marketing, pp.20-23.

[16]. Narendra K. Dadlani, Cut Flower Production in India, KAP Publications, Delhi, 1998, pp.85-90.

[17]. Production and marketing in Thanjavur of Jasmine Taluk, Kissan World, Vol 38 no12, December 2011, P29-31

[18]. Rural agricultural marketing Kissan World, Vol 39 no 6 June 2012, P35-39.

[19]. Raghupathy et al., —Dried Flowers - Significance, Kissan World, Vol.27, No.5, May 2000, p.39.

[20]. Rengasamy et al., —Dry Flowers - A Profitable Floriculture Industry, Kissan World, Vol.26, No.10, October 1999, pp.61-62.

[21]. Sadhu A.N, & Mahajan R.K, Technological Change and Agricultural Development in India, Himalaya Publishing House, New Delhi. 1985.

[22]. Sujatha A. Nair et al., —Dry Flower Industry in Andaman, Kissan World, Vol.28, No.10, October 2001, p.28.

[23]. Tackling unresolved issues, Horticulture, Agriculture Today, July-2002, p.47.

[24]. Tawari S.C., —Rapportour" s report on Horticultural development, Indian Journal of Agricultural Economics. Vol.42, No.3, July –sep 1987, pp-494-536.

[25]. VandanaTyagi, India" s Agricultural challenges for Growth and Development in Present Scenario, Indian Journal of Physical and Social Science, Vol.2(5), May, 2012, Pp.116-127.

III. SURVEY REPORT

[1]. Desalphine S.M, The Hindu Survey of Indian Agriculture, Kasthuri & Sons Limited, Chennai, 2004, p.60.

[2]. Mangala Rai,IMeeting the challengel, The Hindu Survey of Indian Agriculture 2004, p.16.

[3]. Mishra B, The Hindu Survey of Indian Agriculture, Kasthuri & Sons Limited, Chennai, 2004, p.29.

[4]. Panjab Singh, ―Realising an agricultural dreaml, The Hindu Survey of Indian Agriculture, 2002, p.15.

[5]. Paul Khurana S.M, Rajesh Rana K, The Hindu Survey of Indian Agriculture, Kasthuri & Sons Limited, Chennai, 2004, p.49.

[6]. Rajagopal V, Arulraj S, Sairam C.R, The Hindu Survey of Indian Agriculture, Kasthuri & Sons Limited., Chennai, 2004, p.67.

[7]. Seetharama N, Dayakar Rao B, The Hindu Survey of Indian Agriculture, Kasthuri & Sons Limited, Chennai, 2004, p.37.

[8]. Sharma R.K, Tripathi S.C., The Hindu Survey of Indian Agriculture, Kasthuri & Sons Limited, Chennai, 2004, p.33.

[9]. Venkatraman A, The Hindu Survey of Indian Agriculture, Kasthuri & Sons Limited, Chennai, 2002, p.63.

IV. ENCYCLOPEDIA

[1]. Encyclopedia Britannica, A society of Gentlemen in Scotland, William Benton, Publisher, Chicago, 1768, p.72.

[2]. Modern Century Illustrated Encyclopedia - New York, Vol.6, 1972, McGrawHill for Eastern Publishers (P) Ltd., Australia, pp.805-806.

[3]. The New Encyclopedia Britannica, 2005, Vol.4, pp.844-845.

[4]. The Wonder Land of Knowledge, The Pictorial Encyclopedia, Tangley Oaks Educational Center, Illinois, USA, 1961, pp.1526-1531.

V. REPORT

[1]. Amerendra Reddy,A. „Value Chain Analysis of Dryland Agriculture Commodities" , International Crops Research Institute for Semi-Arid Tropics, 2013.

[2]. Primary Censes, Abstract for General Population, TN – Census of India, Director of Census Operation, Tamilnadu, 2001.

[3]. Shankar N, Hand Book of Agriculture, ICAR, New Delhi, 1997, p.343.

VI. NEWS PAPER

[1]. The Hindu, —Horticulture set to receive boost through FICCI initiatives, dated 9th August 2003, p.15.

[2]. The Hindu, Use Modern technology to reduce post harvest loss, dated 11th November 03, p.14.

[3]. The Hindu —Farmers told to aim at international Marketl dated 30th July, 2003

[4]. The New Indian Express, —Transforming agriculture, dated 27th October 2003, p.12.

[5]. Financial Express, Horticulture Needs value Addition Wastages Prevention, 25th November 2003, p.17.

VII. WEB SITES

[1]. www.intamm.com

[2]. www.hindu.com.

[3]. www.indiaagronet.com

[4]. www.fao.org

[5]. www.southindia.com

[6]. www.inibab.com

APPENDIX

ISSUES AND CHALLENGES OF JASMINE ENTREPRENEURS IN KARAIKUDI

QUESTIONNAIRE

Demographic factors:

1) Name:

2) Gender:

      a)Male b)Female

3) Age

      a) Below 25   b) 25-35   c)35-45   d)45-55   e) Above 55

4) Marital status

      a) Married   b) Unmarried

5) Years of Professional experience

      a) Below 5   b) 5-10 c) 10-15   d)15-20   e)Above 20

6) Generation of business

      a)1st gen   b) 2nd gen   c) 3rd gen

7) Location of Business

      a) Urban   b) Rural

8) Business type

      a)Manufacturer b) Whole seller c) Distributor   d) Retailer

9) No. of employees

      a) Below 10   b) 10-15   c) 15-20   d) 20-25   e) Above 25

10) Annual turn over

      a) Below 5 lakhs   b) 5-10 lakhs c) 10-20 lakhs   d) 20- 50 lakhs e) Above 50 lakhs

Part –A

Raw material issue

Please rate the following statements (5- Strongly agree, 4- Agree, 3- neutral, 2- Disagree, 1- Strongly disagree)

Sl.no	Variables	5	4	3	2	1
1	Needed raw materials are available easily					
2	Good Quality raw materials are available from nearby places					
3	Raw materials are available in different varieties					
4	Various seasons affects availability of raw materials.					
5	Price of raw material affects availability of raw material					
6	Sorting of raw materials is easy.					
7	All grades of raw material are availed on time					
8	Raw material perishability is a serious issue					

Part –B

Financial issue

Please rate the following statements (5- Strongly agree, 4- Agree, 3- neutral, 2- Disagree, 1- Strongly disagree)

Sl.no	Variables	5	4	3	2	1
1	Have adequate knowledge about government financial assistance schemes					
2	Have availed financial assistance for business					
3	Have got benefits of government subsidies					
4	Interest rates of loan affects the business					
5	Loan installments are paid from business on time					
6	Advance payments to the farmers for business are difficult.					
7	Insurance payments is considered a burden					
8	Delay in payments from customers affects business sustainability					
9	Banking, funding formalities for financial assistance are easily accessible					
10	Foreign exchange rate affects business sustainability					

Part –C

Marketing issue

Please rate the following statements (5- Strongly agree, 4- Agree, 3- neutral, 2- Disagree, 1- Strongly disagree)

Sl.no	Variables	5	4	3	2	1
1	Marketing the products is difficult in our business					
2	Substitute products affect marketing of the product					
3	Marketing strategy of competitors affects products or business					
4	There is demand for the product in market always					
5	Branding is a barrier in marketing of the products					
6	Product price is affordable to the customers					
7	Our product need more promotion					
8	Quality of packing is good for the product					
9	Lack of communication is a barrier in marketing					
10	Skilled marketing persons are availed for the business					

Part –D
Logistics and Transportation issue

1. Do you need cold storage facilities?
   a) Yes   b) No
2. Do you have cold storage facilities?
   a) Yes   b) No
3. What type of transport do you prefer
   a) private   b) public

Please rate the following statements (5- Strongly agree, 4- Agree, 3- neutral, 2- Disagree, 1- Strongly disagree)

Sl.no	Variables	5	4	3	2	1
1	Transport facilities are available readily					
2	Road facilities and connectivity are essential to our business					
3	Road facilities are stable at all times					
4	Rail transportation is easy to access for goods transport					
5	Shipping and airports are easy to access for exporting					
6	Having enough warehouse and godown facilities					
7	Cold storage facility is one of the challenges of our business sustainability					

Part –E

Profitability issue

Please rate the following statements (5- Strongly agree, 4- Agree, 3- neutral, 2- Disagree, 1- Strongly disagree)

Sl.no	Variables	5	4	3	2	1
1	Competitors play a significant role in the profitability of our business					
2	Interest rate of loan influences profitability of business					
3	Capital Strength of business increases our profitability					
4	Size of the business affects the profit					

Part –F

HR issue

Please rate the level of problems for the following statements (5- Strongly agree, 4- Agree, 3- neutral, 2- Disagree, 1- Strongly disagree)

Sl.no	Variables	5	4	3	2	1
1	Availability of Skilled labor					
2	Availability of alternate/substitute labor					
3	Providing training to labor					
4	Spending for training and development to improve skills of labor					
5	Income/ salary to the labor					
6	Safety & security to employee/ labor					

FUZZY B-SUBALGEBRAS OF B-ALGEBRA WITH RESPECT TO t-NORM

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

A. ARUNPANDIYAN
Reg.No:P19190501

Under the guidance of
Prof. Mr. K. ANAND M.Sc., B.Ed.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON FUZZY IDEALS IN HILBERT ALGEBRAS

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

P. AZHAGUMEENAL
Reg.No:P19190502

Under the guidance of
Prof. Mrs. R.KANIMOZHI M. Sc., M. Phil., B.Ed., PGDCA.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON THE ADJOINT THEORY OF A SQUARE FUZZY MATRIX

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

P. KEERTHANA

Reg.No:P19190503

Under the guidance of
Prof. Mrs. AMUTHA M.Sc., M.Phil., B.Ed., PGDCA., MCA.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON FUZZY SET FIELD AND FUZZY METRIC SPACE

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

T.LAKSHMI PRIYA
Reg. No: P19190504

Under the guidance of
Prof. Mr. S.RAJA M.Sc., M.Phil., B.Ed.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON INTUITIONISTIC FUZZY LINEAR TRANSFORMATION

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

K.PADMAPRIYA
Reg.No:P19190505

Under the guidance of
Prof. Mr. S. RAJA, M. Sc., M. Phil., B.Ed.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON T-FUZZY IDEAL IN ORDERED Γ-SEMIRING

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

R. PAVITHRADEVI
Reg.No:P19190506

Under the guidance of
Prof. Mrs. V. AMUTHA M. Sc., M.Phil., B.Ed., PGDCA., MCA.,
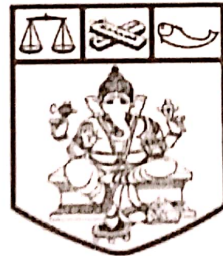
DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON PROPERTIES OF COMPOSITION OF FUZZY RELATIONS AND ITS VERIFICATIONS

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

S. PRIYANKA
Reg.No:P19190507

Under the guidance of
Prof. Mrs. R.KANIMOZHI, M. Sc., M. Phil., B.Ed., PGDCA.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON *m*-POLAR FUZZY GRAPHS AND THEIR APPLICATIONS

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

N.SANGAVI
Reg.No:P19190508

Under the guidance of
Prof. Mr.K. ANAND M.Sc., B.Ed.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON GEOMETRIC APPROACH TO SOLVE FUZZY LINEAR SYSTEM

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

T.SARANYA
Reg.No:P19190509

Under the guidance of
Prof. Mr.A.VADIVELMURUGAN, M. Sc., B.Ed.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON NEW TYPE FUZZY MODULE OVER FUZZY RINGS

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

G. SHALINI
Reg.No:P19190510

Under the guidance of
Prof. Mrs. R. KANIMOZHI M.Sc., M.Phil., B.Ed., PGDCA.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

A STUDY ON NORMAL FUZZY SUBMULTIGROUP OF A MULTIGROUP

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

K.YOGALAKSHMI
Reg.No:P19190511

Under the guidance of
Prof. Mr.A.VADIVELMURUGAN M. Sc., B.Ed.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

Mr. K. ANAND M.Sc., B.Ed.,
Asst. professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle "**FUZZY B-SUBALGEBRAS OF B-ALGEBRA WITH RESPECT TO t-NORM**" is done by **A.ARUNPANDIYAN** (Reg.No:P19190501) is work under my guidance and supervision during the academic year **2019-2021**.

Signature of the Head of the Department

Signature of the Guide

External 23/03/2021

Principal
PRINCIPAL
Ganesar College of Arts & Science
Melalsivapuri

Scanned with OKEN Scanner
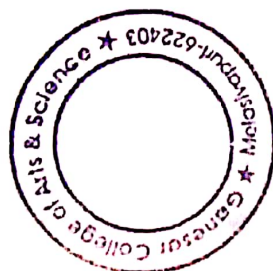
Mrs. R.KANIMOZHI M.Sc., M. Phil., B.Ed., PGDCA.,
Asst. professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle **"A STUDY ON FUZZY IDEALS IN HILBERT ALGEBRAS"** is done by **P.AZHAGUMEENAL (Reg.No:P19190502)** is work under my guidance and supervision during the academic year **2019-2021**.

R. kanimozhi

Signature of the Head of the Department

R. kanimozhi

Signature of the Guide

External 23/03/24

Principal
10/12/01
PRINCIPAL
Ganesar College of Arts & Scienr
Melalsivapurl
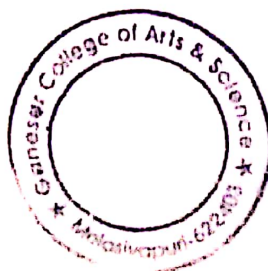
Mrs. V. AMUTHA M.Sc., M.Phil., B.Ed., PGDCA., MCA.,
Assistant Professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle "**A STUDY ON THE ADJOINT THEORY OF A SQUARE FUZZY MATRIX**" is done by **P. KEERTHANA** (Reg.No:P19190503) is work under my guidance and supervision during the academic year **2019-2021**.

R. Kanimozhi

Signature of the Head of the
Department

Signature of the Guide

External 23/03/24

Principal

PRINCIPAL
Ganesar College of Arts & Science
Melaisivapuri
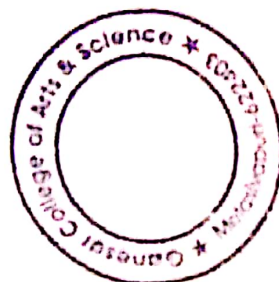
Mr. S.RAJA M.Sc., M. Phil., B.Ed.,
Asst. professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle **"A STUDY ON FUZZY SET FIELD AND FUZZY METRIC SPACE"** is done by **T.LAKSHMIPRIYA** (Reg.No.P19190504) is work under my guidance and supervision during the academic year **2019-2021.**

R.kanimozhi
Signature of the Head of the Department

Raja
Signature of the Guide

External 23/03/202

Principal
PRINCIPAL
Ganesar College of Arts & Scienr
Melalsivapurl

Mr. S. RAJA, M.Sc., M.Phil., B.Ed.,
Asst. professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

<u>CERTIFICATE</u>

This to certify that the thesis entitle **"A STUDY ON INTUITIONISTIC FUZZY LINEAR TRANSFORMATION"** is done by **K.PADMAPRIYA (Reg.No:P19190505)** is work under my guidance and supervision during the academic year **2019-2021.**

Signature of the Head of the Department

Signature of the Guide

External 23/03/2021

Principal
PRINCIPAL
Ganesar College of Arts & Scienc
Melaisivapuri.
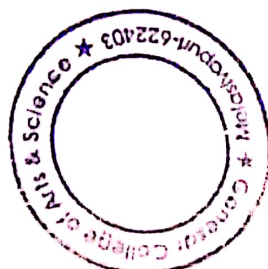
Mrs.V. AMUTHA M.Sc., M.Phil., B.Ed., PGDCA., MCA.,
Assistant Professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle **"A STUDY ON T-FUZZY IDEAL IN ORDERED Γ-SEMIRING"** is done by **R. PAVITHRADEVI (Reg.No:P19190506)** is work under my guidance and supervision during the academic year **2019-2021.**

Signature of the Head of the
Department

Signature of the Guide

External 23/03/2024

Principal
PRINCIPAL
Ganesar College of Arts & Science
Melaisivapuri

Mrs. R.KANIMOZHI, M.Sc., M.Phil., B.Ed., PGDCA.,
Asst. professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle **"A STUDY ON PROPERTIES OF COMPOSITION OF FUZZY RELATIONS AND ITS VERIFICATIONS"** is done by **S. PRIYANKA (Reg.No:P19190507)** is work under my guidance and supervision during the academic year **2019-2021.**

Signature of the Head of the Department

Signature of the Guide

External 37/03/2021

Principal
PRINCIPAL
Ganesar College of Arts & Science
Melaisivapuri

Scanned with OKEN Scanner

Mr.K.ANAND M.Sc.,B.Ed.,
Asst. professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle "**A STUDY ON *m*-POLAR FUZZY GRAPHS AND THEIR APPLICATIONS**" is done by **N.SANGAVI (Reg.No:P19190508)** is work under my guidance and supervision during the academic year **2019-2021**.

Signature of the Head of the Department

Signature of the Guide

Principal

External 23/03/2021

PRINCIPAL
Ganesar College of Arts & Scienr
Melaisivapuri
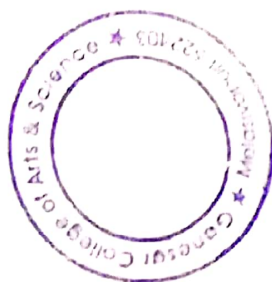
Mr.A.VADIVELMURUGAN, M. Sc., B.Ed.,
Asst. professor in Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle "A STUDY ON GEOMETRIC APPROACH TO SOLVE FUZZY LINEAR SYSTEM" is done by **T.SARANYA (Reg.No:P19190509)** is work under my guidance and supervision during the academic year **2019-2021.**

Signature of the Head of the Department

Signature of the Guide

External 23/03/202

Principal 9/3/2
PRINCIPAL
Ganesar College of Arts & Scien
Melaisivapuri

Scanned with OKEN Scanner
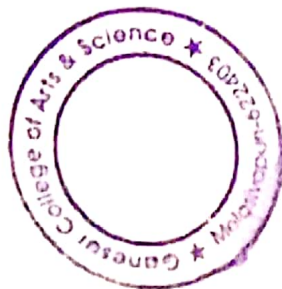
Mrs. R.KANIMOZHI M.Sc., M.Phil., B.Ed., PGDCA.,
Assistant Professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle **"A STUDY ON NEW TYPE FUZZY MODULE OVER FUZZY RINGS"** is done by **G.SHALINI (Reg.No:P19190510)** is work under my guidance and supervision during the academic year **2019-2021.**

Signature of the Head of the Department

Signature of the Guide

External 23/03/2021

Principal
9/3/2

PRINCIPAL
Ganesar College of Arts & Scienc
Melaisivapuri

Mr. A. VADIVELMURUGAN M.Sc., B.Ed.,
Assistant professor in Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle "A STUDY ON NORMAL
FUZZY SUBMULTIGROUP OF A FUZZY MULTIGROUP" is
done by K.YOGALAKSHMI (Reg.No:P19190511) is work under my
guidance and supervision during the academic year 2019-2021.

Signature of the Head of the
Department

Signature of the Guide

External 23/03/223

Principal
9/3/21
PRINCIPAL
Ganesar College of Arts & Scienr
Melaisivapuri

A STUDY ON PROPERTIES OF COMPOSITION OF FUZZY RELATIONS AND ITS VERIFICATIONS

Submitted in partial fulfillment of the
Requirement for the degree
Of

MASTER OF SCIENCE IN MATHEMATICS
Of
BHARATHIDASAN UNIVERSITY

Submitted by

S. PRIYANKA
Reg.No:P19190507

Under the guidance of
Prof. Mrs. R.KANIMOZHI, M. Sc., M. Phil., B.Ed., PGDCA.,

DEPARTMENT OF MATHEMATICS
GANESAR COLLEGE OF ARTS AND SCIENCE
(Affiliated to BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI)
Melaisivapuri-622 403
April-2021

Mrs. R.KANIMOZHI, M.Sc., M.Phil., B.Ed., PGDCA.,
Asst. professor of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri-622 403,
Pudukkottai district, Tamil Nadu.

CERTIFICATE

This to certify that the thesis entitle **"A STUDY ON PROPERTIES OF COMPOSITION OF FUZZY RELATIONS AND ITS VERIFICATIONS"** is done by **S. PRIYANKA (Reg.No:P19190507)** is work under my guidance and supervision during the academic year **2019-2021.**

Signature of the Head of the Department

Signature of the Guide

External 23/03/2021

Principal

PRINCIPAL
Ganesar College of Arts & Science
Melaisivapuri

S. PRIYANKA,
M.Sc-II year,
Department of Mathematics,
Ganesar College of Arts & Science,
Melaisivapuri.

DECLARATION

I hereby declare that the dissertation entitled, **"A STUDY ON PROPERTIES OF COMPOSITION OF FUZZY RELATIONS AND ITS VERFICATION"** submitted to the Ganesar college of Arts & Science is a partial fulfillment of the requirements for the award of the degree of master of science in mathematics is a record of work by me during the period 2020-2021 of my study in the Department of Mathematics, Ganesar College of Arts & Science, Melaisivapuri under the guidance and dissertation has not formed the award of my Degree, Diploma, Associate Ship, fellowship or other similar title to the candidate of university.

S. priyanka/.

Signature of the candidate

Place: Melaisivapuri
Date: 23·03·2021

ACKNOWLEDGEMENT

My ultimate thanks goes to God almighty for giving me the strength and making the completion of this thesis possible.

I express my immense pleasure to thank our **Principal Dr. M. SELVARAJ** for this kind permission and motivation to do this project work.

I express my sincere and profound thanks to **Mrs. R. KANIMOZHI Head** of the Department of Mathematics, Ganesar college of Arts & Science,Melaisivapuri, for this encouragement and timely suggestion.

I wish to be indebted to my beloved project guide **Mrs. R. KANIMOZHI** Assistant Professor in Mathematics, Ganesar college of Arts & Science has valuable guidance for the successful completion of the project along with the languages.

I would like to express my special thanks to **Dr.T. R. DEIVANAI** and **Mrs. K. ANNALAKSHMI** Librarians in our college for their excellent help in providing me the required my project.

I exprees my sincere thanks to my Father **N. SIVASAKTHIVEL** and my Mother **S. PARAMESHWARI** and my Sister **S. PRIYADHARSHINI** and my Brother **S. VENKATESH** for encouraging me in all efforts.

I feel happy to thank all the faculty members of our department and my friends for their timely help extended during the course of Project.

I express my sweet thanks to my friends. I whole heartedly thank my parents and the almighty showering the blessing on me to do this project work successfully.

INDEX

ABSTRACT

This paper, deals with fundamental notions in pure and applied sciences ,i.e., basic operations related to fuzzy relations. The composition of fuzzy relations are defined in two ways such as max-min composition and max-product composition with suitable example.This paper also introduce the properties of composition of fuzzy relations. The newly introduced properties inculcates zero, identity,equal,not-equal,subset, associative, union, intersection and distributive fuzzy relations .Finally ,the paper verifies the properties of composition of fuzzy relations using some numerical value 2*2 order of matrix and 3*3 order of matrix. Also gives some exercise problems related to the above concepts with accurate answer keys .

INTRODUCTION

Fuzzy relation was introduced by L.A.Zadeh in the year 1965 .In general , fuzzy relations are the concept of relations in the same manner as fuzzy sets generalize the fundamental idea if sets .

A classical set theory by crisp(exact) boundaries i.e., there is no uncertainty about the location of the set boundaries and widely used in digital system design. For example , the question arise "Is water colorless?" then the only crisp sets are "Yes or No". Therefore, classical set theory allows the membership of the elements in the set in binary terms.

The word "fuzzy" means "vagueness or ambiguity" , i.e., fuzziness occurs when the boundary of a piece of information is not clear-cut .For example, the words like young ,tall, good or high are fuzzy sets. In above examples the term young defines there is no single quantitative value (i.e., for some people age 25 is young and for others age 35 is young). Therefore, the concept young has no clean boundar

Also,fuzzy set theory is an extension of classical set thory which is defined for research approach that can deal with problems relating to ambiguous boundaries ,i.e., there exists uncertainty about the location of the boundaries and which is used in fuzzy controllers . For example, the statement arise "Is Ravi Honest" then the fuzzy sets are , "Extremely Honest (1), very Honest (0.90), Honest at time (0.50) and Extremely Dishonest (0.0) ". Therefore , fuzzy set theory permits membership function valued in the interval [0,1] . Fuzzy relation are significant concepts in fuzzy theory and have been widely used in many fields such as fuzzy control and uncertainty reasoning.

They also have used applications in some fields such as medicine, psychology, economics and sociology.

In that paper we discuss about the concept of composition of fuzzy relation and its properties with suitable examples . We have also given related exercise problems with answer keys.

CHAPTER-I

Definition: 1.1

A **set** is any well-defined collection of objects, that object called the elements or members of the set.

Example: 1.1

- The collection of computers in the lab.
- The collection of mathematics students in Ganesar College of arts and science, Melaisivapuri.

Definition: 1.2

A is a **subset** of B if every element of A is also contained in B. This written, $A \subseteq B$.

Examples : 1.2

The set of integers,

$$\{\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots\}$$

- $\{a, b, e\} \subseteq \{a, b, c, e, g\}$
- $\{dog, cat\}$ is not a subset of $\{dog, pig, goat\}$.

Definition: 1.3

A membership function for a fuzzy set A on the universe of discourse X is defined as $\mu_A : X \to [0,1]$ where each element of X is mapped to a value between 0 and 1. This value is called **membership value or degree of membership** quantifies the grade of membership of the element in X to the fuzzy set A.

Definition: 1.4

The **Cartesian product** $A \times B$ is the set of all possible combination of the items of A and B.

Example: 1.4

i) $A = \{a_1, a_2, a_3\}$ and $B = \{b_1, b_2\}$ which means:

$$A \times B = \{(a_1, b_1), (a_1, b_2), (a_2, b_1), (a_2, b_2), (a_3, b_1), (a_3, b_2)\}$$

ii) $A = \{0,1\}$, $B = \{1,2\}$ and $C = \{0,1,2\}$

$$A \times B \times C = \{(0,1,0), (0,1,1), (0,1,2), (0,2,0),$$
$$(0,2,1), (0,2,1), (1,1,0), (1,1,1),$$
$$(1,1,2), (1,2,0), (1,2,1), (1,2,2)\}.$$

Definition: 1.5

The **composition** $f \circ g$ of two functions f and g is the function formed by first applying the function g and then the function f. The function f using g(x) as the input and obtain the result $f(g(x))$.

We can write the composition as $(f \circ g)(x) = f(g(x))$.

Example: 1.5

f: A→B   g:B→C

ƒ∘g : A →C
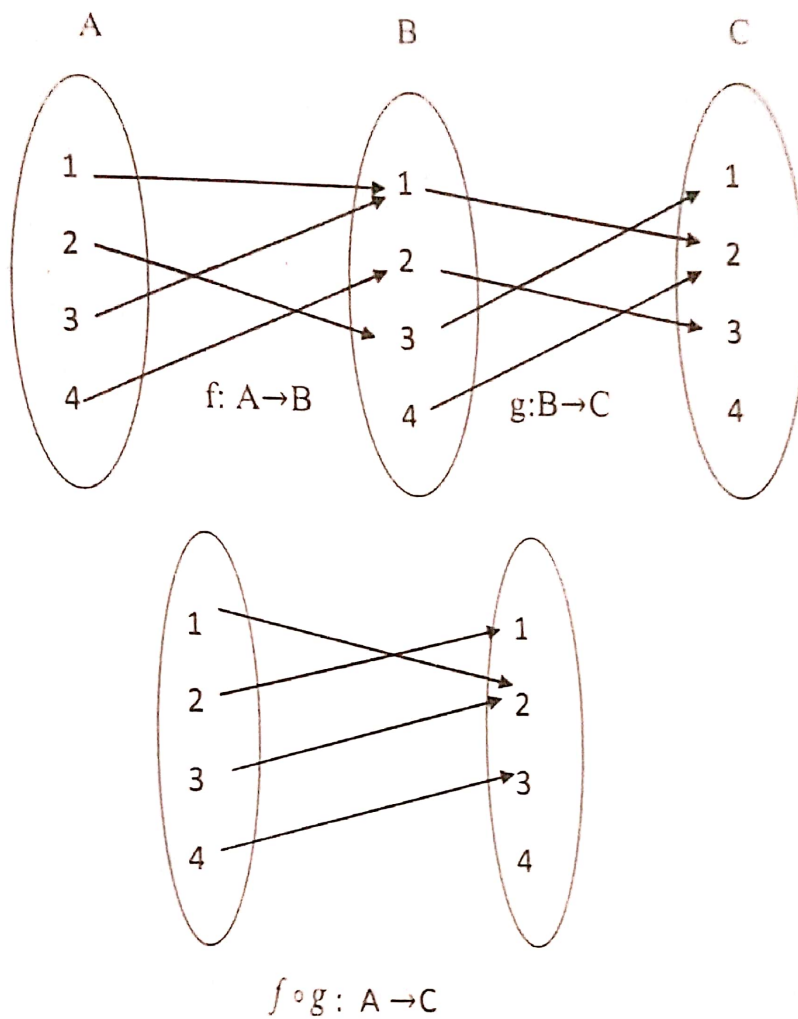
Definition: 1.6

If A is a non empty set , then the **complement** of the set U-A

(with respect to U) denoted by $\bar{A}$ is the set U-A.

$$\bar{A} = \{x \in U \setminus x \ A\}$$

The complement of A is sometimes denoted by A^c.

Example: 1.6

If U is the positive integers less than 100, what is the complement $\{x \backslash x > 70\}$.

Solution:

$$A^c = \{x \backslash x \le 70\}.$$

Definition: 1.7

A relation between two set is a collection of ordered pairs containing one object from each set. If the object X is from the first set and the object Y is from the second set, then the objects are said to be **related** if the **ordered pair (X,Y)** in the relation.

Example: 1.7

$$\{(1, c), (5, a), (8, b)\}$$
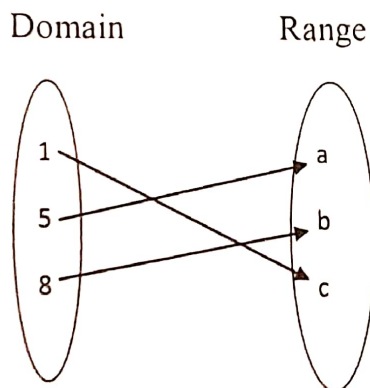
Definition: 1.8

Let A and B be non-empty set. A binary operation from A to B is a subset R of $A \times B = \{a \in A, b \in B\}$.

For this reason, sets of ordered pairs are called **binary relations.**

Definition: 1.9

Let A be non-empty set .A binary operation * on A is a function * on A is a function *: A×A→A. The image of an ordered pair (a ,b) ∈ A×A under * is denoted by a * b .

A set A with a binary operation * defined on its is denoted by (A, *).

Example: 1.9

The usual addition ,+,is binary operation of N,Z,Q,R and C.

R_1 = {(a, b)\ a≤ b}

R_2 = {(a, b)\a, b∈ N, a/b∈ Z}

R_3 = {(a, b)\a, b∈ N, a-b=Z}

Definition: 1.10

A relation IA on A is called the **identity relation** if every element of A is related itself only.

Example: 1.10

If A = {1, 2, 3} then the relation

IA = {(1, 1),(2, 2),(3, 3)} is the identity relation on set A.

Definition: 1.11

The union of two sets A and B , denoted by A∪B , is defined to be the set of all elements belonging to A or B.

A∪B={x/ x∈ A or x∈ B}.

Example: 1.11

A= {1, 2} and B = {2, 3}

A∪B = {1, 2, 3}.

Definition: 1.12

The intersection of any two sets A and B denoted by A∩B, is defined to be the set of all elements belonging to both A and B.

A ∩B={x/x ∈A and x∈ B}.

Example: 1.12

i) A={1, 2, 3} and B={3, 4, 5}

A∩B = {3}

ii) A={1, 2, 3} and B={4, 5, 6}

A ∩ B = {∅}

Definition: 1.13

A matrix with same number of rows as columns is called **square** . Two matrices are equal if they have the same number of rows and the same number of columns.

Example: 1.13

A square matrix 2×2, 3×3, …n×n.

$$\begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix}, \begin{bmatrix} 7 & 4 & 2 \\ 9 & 8 & 6 \\ 3 & 0 & 1 \end{bmatrix}$$

Definition: 1.14

Two matrix are **equal** if the entry in any position of the one matrix equals the entry in the same position of the other matrix.

Example: 1.14

i)
$$\begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix}$$

ii)
$$\begin{bmatrix} 1 & 1 \\ 2 & 1 \end{bmatrix} \neq \begin{bmatrix} 2 & 1 \\ 1 & 1 \end{bmatrix}$$

iii)
$$\begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \neq \begin{bmatrix} 3 & 1 \\ 0 & 1 \end{bmatrix}$$

CHAPTER – II

Definition: 2.1

A definition of a **fuzzy set** is given by the membership function

$$\mu_F : \cup \to [0,1]$$

elements of the universe of discourse $\cup$, can belong to the fuzzy set with any value between 0 and 1.

If X is an universe of discourse and X is a particular element of X, then a fuzzy set A define on X and can be written as a collection of ordered pairs.

$$A = \{(x, \mu_A(x)), x \in X\}$$

Example: 2.1

- Let $X = \{g_1, g_2, g_3, g_4, g_5\}$ be the reference set of students.
- Let $\grave{A}$ be the fuzzy set of "smart" students, where "smart" is fuzzy terms.

  $A = \{(g_1, 0.4)(g_2, 0.5)(g_3, 1)(g_4, 0.9)(g_5, 0.8)\}$

  Here A indicates that the smartness of g_1 is 0.4 and so on.

Definition: 2.2

Fuzzy set:

- Membership function: user specifies.
- Membership degree [0, 1].

Crisp set:

$$\text{Membership function}: \mu_A = \begin{cases} 1, & \text{if and only if } x \in A \\ 0, & \text{if and only if } x \notin A \end{cases}$$

Membership degree: [0, 1].

Examples: 2.2

Fuzzy set is a generalization of the classical set or crisp set.

Examples of fuzzy set	Examples of crisp set
1. Tall men	1.Men with height $\geq$ 5 ft
2. Good boys	2.Boys passed in first class.

Definition: 2.3

A Fuzzy subset in x the collection of ordered pairs

$$(x, \mu_a(x)) \text{ with } x \in X$$

And a membership function $\mu: X \to [0, 1]$. The value $\mu_a(x)$ of x denotes the degree to which an element x may be a member of α.

Thus a fuzzy subset α of X is denoted by

$$\alpha = \{(x, \mu_a(x)): x \in X\}$$

Where $\mu_a(x) = 1$, indicates strictly the containment of the element x in α (full membership) and $\mu_a(x) = 0$ denotes that x does not belongs to α (non membership).A fuzzy set α can also be represented in the following way $\alpha = \{x: \mu_a(x) , \forall x \in X \}$.

The set of all fuzzy subset on X is denoted by I_x .

Definition: 2.4

Union of A and B denoted by **AUB**, is defined as that fuzzy set on U for which

$$(A \cup B)(x) = \max(A(x), B(x)) \text{ for every x in } U.$$

11

Example: 2.4

$$A = \{1.0, 0.20, 0.75\}, B = \{0.2, 0.45, 0.50\}$$

$$A \cup B = \{\max(1.0, 0.2), \max(0.20, 0.45), \max(0.75, 0.50)\}$$

$$= \{1.0, 0.45, 0.75\}.$$

Definition: 2.5

Intersection of A and B denoted by $A \cap B$ is defined .As that fuzzy set on $\cup$ for which

$$(A \cap B)(x) = \min(A(x), B(x))$$

Example : 2.5

$$A = \{(x_1, 0.5), (x_2, 0.7), (x_3, 0)\} \text{ and } B = \{(x_1, 0.8), (x_2, 0.2), (x_3, 1)\}$$

$$A \cap B = \{(x_1, 0.5), (x_2, 0.2), (x_3, 0)\}$$

Definition: 2.6

Complement of A, denoted by A' , is defined as that fuzzy set on $\cup$, for which $(A')(x) = 1 - A(x)$

Example: 2.6

$$A = \{(x_1, 0.5), (x_2, 0.7), (x_3, 0)\}$$

$$\mu_A(x_1) = 1 - \mu_A(x_1)$$

$$= 1 - 0.5$$

$$= 0.5$$

$$\mu_A(x_2) = 0.3 \text{ and } \mu_A(x_3) = 1$$

$$A' = \{(x_1, 0.5), (x_2, 0.3), (x_3, 1)\}$$

Definition: 2.7

The Cartesian product $\tilde{A} \times \tilde{B} = \{(x, y) / x \in \tilde{A}, y \in \tilde{B}\}$

Where $\tilde{A}$ and $\tilde{B}$ are subset of the universal sets X and Y correspondingly.

Definition : 2.8

A fuzzy relation is a fuzzy set defined on the $(x_1, x_2, x_3, \ldots x_n)$ that may have varying degrees of membership within the relation. The membership value is usually represented by a real number for the closed interval [0,1] and indicates the strength of the present relation between elements of the tuple .

Consider $\tilde{R} : X \times Y \rightarrow [0,1]$ then the fuzzy relation on $X \times Y$ denoted by $\tilde{R}$ or $\tilde{R}$ (x,y) is defined as the set

$$\tilde{R} = \{(x, y), \mu_{\tilde{R}} (x, y) / (x, y) \in X \times Y \}$$

Where $\mu_{\tilde{R}} (x, y)$ is the strength of the relation in two variables called the membership function . It gives the degree of membership of the ordered pair (x,y) in $\tilde{R}$ associating with each pair (x,y) in $X \times Y$ a real number in the interval [0,1].

The degree of membership indicates the degree to which x is in the relation with y.

Definition: 2.9

Let $\tilde{A}$ and $\tilde{B}$ be fuzzy sets on the universes X and Y, then

$$\tilde{A} \times \tilde{B} = \tilde{R} \subset X \times Y$$

Then the fuzzy relation $\tilde{R}$ has a membership function

$$\mu_{\tilde{R}}(X, Y) = \mu_{\tilde{A} \times \tilde{B}}(x, y) = \min\{\mu_{\tilde{A}}(x), \mu_{\tilde{B}}(y)\}$$

is called the **fuzzy Cartesian product** of $X \times Y$.

Example: 2.9

Let $\tilde{A}$ defined on the universe of three discrete temperatures, $X=\{ (x_1,x_2,x_3)\}$, and $\tilde{B}$ defined on the universe of two discrete pressures, $Y= \{y_1,y_2\}$ .Fuzzy set $\tilde{A}$ represents the "ambient" temperature and fuzzy set $\tilde{B}$ represents the "near optimum" pressure for a certain heat exchanger and the Cartesian product might represents the conditions (temperature-pressure pairs) of the exchanger that are associated with "efficient" operations.

$\tilde{A}=\dfrac{0.2}{x_1}+\dfrac{0.5}{x_2}+\dfrac{1}{x_3}$ and $\tilde{B}=\dfrac{0.3}{y_1}+\dfrac{0.9}{y_2}$ then

$$\tilde{A}\times\tilde{B}=\tilde{R}= \begin{array}{c} \\ x_1 \\ x_2 \\ x_3 \end{array} \begin{array}{cc} y_1 & y_2 \\ \begin{bmatrix} 0.2 & 0.2 \\ 0.3 & 0.5 \\ 0.3 & 0.9 \end{bmatrix} \end{array}$$

Definition: 2.10

The Cartesian product $\tilde{A}\times\tilde{B}$ is called a **zero fuzzy relation**, if

$$0=\{((x,y), \mu_0 (x,y)) / (x,y) \in \tilde{A}\times\tilde{B}, \ \mu_0 (x,y) =0\}.$$

If we set $\mu_{\tilde{R}} (x, y)=1$ in the definition of fuzzy relation , we get classical relation.

Definition: 2.11

The identity relation I defined for all $(x,y) \in \tilde{A}\times\tilde{B}$ then its membership follows:

$$I= \mu_I = \begin{cases} 1 & for\ x = y \\ 0 & for\ x \neq y \end{cases}$$

14

Example: 2.11

Assume two fuzzy sets

$$\tilde{A}=\{\frac{0.2}{x_1}+\frac{0.5}{x_2}+\frac{1}{x_3}\}, \quad \tilde{B}=\{\frac{0.3}{y_1}+\frac{0.9}{y_2}\}$$

Find the fuzzy relation (the cartesian product).

Solution:

$\tilde{A}\times\tilde{B}=\tilde{R}=$

X \ Y	y_1	y_2
x_1	0.2	0.2
x_2	0.3	0.5
x_3	0.3	0.9

THE BASIC OPERATION ON FUZZY RELATIONS

Let $\tilde{R}_1$ and $\tilde{R}_2$ be two fuzzy relations on $\tilde{A}\times\tilde{B}$ such that

$$\tilde{R}_1 = \{(x,y), \mu_{\tilde{R}_1}(x,y)\},(x,y)\in\tilde{A}\times\tilde{B}$$

$$\tilde{R}_2 = \{(x,y), \mu_{\tilde{R}_2}(x,y)\},(x,y)\in\tilde{A}\times\tilde{B}$$

We use the membership function $\mu\tilde{R}_1$ (x,y) and $\mu\tilde{R}_2$ (x,y) in order to introduce the operations with $\tilde{R}_1$ and $\tilde{R}_2$ similarly to operation with fuzzy sets.

A. The equality

$\tilde{R}_1 = \tilde{R}_2$ iff or every pair (x, y)$\in \tilde{A}\times\tilde{B}$, we have

$\mu\tilde{R}_1$ (x, y)$= \mu\tilde{R}_2$ (x, y).

B. The inclusion

The pair of all (x, y)$\in \tilde{A}\times\tilde{B}$, then $\mu\tilde{R}_1$ (x, y) $\leq \mu \tilde{R}_2$ (x, y), the

relation $\tilde{R}_1$ is included in $\tilde{R}_2$ (or) $\tilde{R}_2$ is larger than $\tilde{R}_1$, denoted by $\tilde{R}_1 \subseteq \tilde{R}_2$

If $\tilde{R}_1 \subseteq \tilde{R}_2$, in addition if for at least one pair $(x,y), \mu \tilde{R}_1 (x,y) < \mu \tilde{R}_2 (x,y)$, then we have the proper inclusion $\tilde{R}_1 \subset \tilde{R}_2$.

Example: 2.12

$\tilde{R}_1 =$

Y / X	y_1	y_2	y_3
x_1	0	0.2	0.6
x_2	0.4	1	0.8

$\tilde{R}_2 =$

Y / X	y_1	y_2	y_3
x_1	0.1	0.2	0.7
x_2	0.5	1	0.9

Then we have,

$\mu_{\tilde{R}_1}(x_1, y_1) = 0 < \mu_{\tilde{R}_2}(x_1, y_1) = 0.1$

$\mu_{\tilde{R}_1}(x_2, y_1) = 0.4 < \mu_{\tilde{R}_2}(x_2, y_1) = 0.5$

$\mu_{\tilde{R}_1}(x_1, y_2) = 0.2 = \mu_{\tilde{R}_2}(x_1, y_2) = 0.2$

$\mu_{\tilde{R}_1}(x_2, y_2) = 1 = \mu_{\tilde{R}_2}(x_2, y_2) = 1$

17

$$\mu_{\tilde{R}_1}(x_1, y_3) = 0.6 < \mu_{\tilde{R}_2}(x_1, y_3) = 0.7$$

$$\mu_{\tilde{R}_1}(x_2, y_3) = 0.8 < \mu_{\tilde{R}_2}(x_2, y_3) = 0.9$$

Hence $\tilde{R}_1$ is included in $\tilde{R}_2$,i.e. $\tilde{R}_1 \subset \tilde{R}_2$.

C. The complement

The complement of a relation $\tilde{R}$ denoted by $\tilde{R}^{\grave{}}$, is defined by

$$\mu_{\tilde{R}^{\grave{}}}(x, y) = 1 - \mu_{\tilde{R}}(x, y)$$

Example: 2.13

Consider the relation $\tilde{R}$ is given by the table and find its complementation.

$\tilde{R} =$

X \ Y	y_1	y_2	y_3
x_1	0	0.2	0.6
x_2	0.5	1.0	0.8

Solution:

$\tilde{R}^{\grave{}} =$

X \ Y	y_1	y_2	y_3
x_1	1.0	0.8	0.4
x_2	0.5	0	0.2

D. The union

The union of $\tilde{R}_1$ and $\tilde{R}_2$ denoted by $\tilde{R}_1 \cup \tilde{R}_2$, is defined by

$$\mu_{\tilde{R}_1 \cup \tilde{R}_2}(x, y) = \max\{\mu_{\tilde{R}_1}(x, y), \mu_{\tilde{R}_2}(x, y)\} \quad ,(x,y) \in \tilde{A} \times \tilde{B}$$

E .The intersection

The intersection of $\tilde{R}_1$ and $\tilde{R}_2$ denoted by $\tilde{R}_1 \cap \tilde{R}_2$, is defined by

$$\mu_{\tilde{R}_1 \cap \tilde{R}_2}(x, y) = \min\{\mu_{\tilde{R}_1}(x, y), \mu_{\tilde{R}_2}(x, y)\} \quad ,(x,y) \in \tilde{A} \times \tilde{B}.$$

Example: 2.14

The relations $\tilde{R}_1$ and $\tilde{R}_2$ are given by following tables.

$\tilde{R}_1 =$

X \ Y	y_1	y_2	y_3
x_1	0	0.1	0.2
x_2	0	0	0.3
x_3	0.2	0.3	0.1

$\tilde{R}_2 =$

X \ Y	y_1	y_2	y_3
x_1	0.3	0.3	0.2
x_2	0.5	0.7	0.6
x_3	0.7	0.8	1

Solution:

i)

$\tilde{R}_1 \cup \tilde{R}_2 =$

X＼Y	y_1	y_2	y_3
x_1	0.3	0.3	0.2
x_2	0.5	0	0.6
x_3	0.7	0.3	0.1

ii)

$\tilde{R}_1 \cap \tilde{R}_2 =$

X＼Y	y_1	y_2	y_3
x_1	0	0.1	0.2
x_2	0	0.7	0.3
x_3	0.2	0.8	1

Obviously, the proper inclusion $(\tilde{R}_1 \cap \tilde{R}_2) \subset (\tilde{R}_1 \cup \tilde{R}_2)$ holds.

Definition: 2.15

A fuzzy matrix may be a matrix with elements having values in the fuzzy interval. The unit interval $[0,1]$, and the interval $[-1,1]$ are called fuzzy intervals.

CHAPTER-III

Definition: 3.1

Let $\tilde{R}$ is a fuzzy relation on the cartesian space $X \times Y$; $\tilde{S}$ is a fuzzy relation on the Cartesian space $Y \times Z$; $\tilde{T}$ is a fuzzy relation on the Cartesian space $X \times Z$.

Therefore, fuzzy max-min and fuzzy max-product compositions are defined as $\tilde{T} = \tilde{R} \circ \tilde{S}$.

i) Max-min composition

$$\mu_{\tilde{T}}(x,z) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x,y) \cap \mu_{\tilde{S}}(y,z)\}$$

ii) Max-product composition

$$\mu_{\tilde{T}}(x,z) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x,y) \circ \mu_{\tilde{S}}(y,z)\}$$

Example: 3.1

If $X = \{x_1, x_2\}$, $Y = \{y_1, y_2\}$ and $Z = \{z_1, z_2, z_3\}$, consider the following fuzzy relations:

$$\tilde{R} = \begin{array}{c} x_1 \\ x_2 \end{array} \begin{bmatrix} 0.7 & 0.5 \\ 0.8 & 0.4 \end{bmatrix} \quad \text{and} \quad \tilde{S} = \begin{array}{c} y_1 \\ y_2 \end{array} \begin{bmatrix} 0.9 & 0.6 & 0.5 \\ 0.1 & 0.7 & 0.5 \end{bmatrix}$$

Find the max-min composition.

Solution:

$$\mu_{\tilde{T}}(x_1, z_1) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_1, y) \cap \mu_{\tilde{S}}(y, z_1)\}$$

$$= \max\{\min(0.7, 0.9), \min(0.5, 0.1)\}$$

$$=\max\{0.7, 0.1\}$$

$$=0.7$$

$$\mu_{\tilde{T}}(x_1, z_2) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_1, y) \cap \mu_{\tilde{S}}(y, z_2)\}$$

$$=\max\{\min(0.7, 0.6), \min(0.5, 0.7)\}$$

$$=\max\{0.6, 0.5\}$$

$$=0.6$$

$$\mu_{\tilde{T}}(x_1, z_3) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_1, y) \cap \mu_{\tilde{S}}(y, z_3)\}$$

$$=\max\{\min(0.7, 0.5), \min(0.5, 0.5)\}$$

$$=\max\{0.5, 0.5\}$$

$$=0.5$$

$$\mu_{\tilde{T}}(x_2, z_1) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_2, y) \cap \mu_{\tilde{S}}(y, z_1)\}$$

$$=\max\{\min(0.8, 0.9), \min(0.4, 0.1)\}$$

$$=\max\{0.8, 0.1\}$$

$$=0.8$$

$$\mu_{\tilde{T}}(x_2, z_2) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_2, y) \cap \mu_{\tilde{S}}(y, z_2)\}$$

$$=\max\{\min(0.8, 0.6), \min(0.4, 0.7)\}$$

$$=\max\{0.6, 0.4\}$$

$$=0.6$$

$$\mu_{\tilde{T}}(x_2, z_3) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_2, y) \cap \mu_{\tilde{S}}(y, z_3)\}$$

$$=\max\{\min(0.8, 0.5), \min(0.4, 0.5)\}$$

$$=\max\{0.5, 0.4\}$$

$$=0.5$$

$$\therefore \tilde{T} = \begin{array}{c} \\ x_1 \\ x_2 \end{array} \begin{array}{ccc} z_1 & z_2 & z_3 \\ \begin{bmatrix} 0.7 & 0.6 & 0.5 \\ 0.8 & 0.6 & 0.4 \end{bmatrix} \end{array}$$

Example: 3.2

$$\tilde{R} = \begin{array}{c} x_1 \\ x_2 \end{array} \begin{array}{cc} y_1 & y_2 \\ \begin{bmatrix} 0.3 & 0.9 \\ 0.6 & 0.2 \end{bmatrix} \end{array} \text{ and } \quad \tilde{S} = \begin{array}{c} y_1 \\ y_2 \end{array} \begin{array}{cc} z_1 & z_2 \\ \begin{bmatrix} 0.7 & 0.5 \\ 0.4 & 0.8 \end{bmatrix} \end{array}$$

Find the max-product composition.

Solution:

$$\mu_{\tilde{T}}(x_1, z_1) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_1, y) \circ \mu_{\tilde{S}}(y, z_1)\}$$

$$=\max\{(0.3, 0.7), (0.9, 0.4)\}$$

$$=\max\{0.21, 0.36\}$$

$$=0.36$$

$$\mu_{\tilde{T}}(x_1, z_2) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_1, y) \circ \mu_{\tilde{S}}(y, z_2)\}$$

$$=\max\{(0.3, 0.5), (0.9, 0.8)\}$$

$$=\max\{0.15, 0.72\}$$

$$=0.72$$

$$\mu_{\tilde{T}}(x_2, z_1) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_2, y) \circ \mu_{\tilde{S}}(y, z_1)\}$$

$$= \max\{(0.6, 0.7), (0.2, 0.4)\}$$

$$= \max\{0.42, 0.8\}$$

$$= 0.42$$

$$\mu_{\tilde{T}}(x_2, z_2) = \bigcup_{y \in Y} \{\mu_{\tilde{R}}(x_2, y) \circ \mu_{\tilde{S}}(y, z_2)\}$$

$$= \max\{(0.6, 0.5), (0.2, 0.8)\}$$

$$= \max\{0.30, 0.16\}$$

$$= 0.30$$

$$\therefore \quad \tilde{T} = \begin{array}{c} x_1 \\ x_2 \end{array} \begin{bmatrix} 0.36 & 0.7 \\ 0.42 & 0.30 \end{bmatrix} \quad \begin{array}{cc} z_1 & z_2 \end{array}$$

PROPERTIES OF COMPOSITION OF FUZZY RELATIONS

Let $\tilde{R}$, $\tilde{R}_1$, $\tilde{R}_2$, $\tilde{R}_3$ are fuzzy relations. Then

(i) Composition of fuzzy with zero relation
   $\tilde{R} \circ \tilde{0} = \tilde{0} \circ \tilde{R}$ ($\tilde{0} \rightarrow$ Zero Relation)

(ii) Composition of fuzzy with identity relation
   $\tilde{R} \circ \tilde{I} = \tilde{I} \circ \tilde{R}$ ($\tilde{I} \rightarrow$ Identity Relation)

(iii) Composition of any two arbitrary fuzzy relations
   $\tilde{R}_1 \circ \tilde{R}_2 \neq \tilde{R}_2 \circ \tilde{R}_1$ (In genral)

(iv) Composition of fuzzy subset relations
   $\tilde{R}_2 \subseteq \tilde{R}_1 \Rightarrow (\tilde{R}_1 \circ \tilde{R}_2) \subseteq (\tilde{R}_1 \circ \tilde{R}_1)$ (In general subset)

(v) Composition of arbitrary fuzzy associative relations

$$\tilde{R}_1 \circ (\tilde{R}_2 \circ \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \circ \tilde{R}_3 \text{ (In general associative)}$$

(vi) Composition of arbitrary fuzzy distributive with union relations

$$\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3) \text{ (In general union)}$$

(vii) Composition of arbitrary fuzzy distributive with intersection relations

(a) If all the elements in $\tilde{R}_2 \neq 0$ and either of atleast one element in both $\tilde{R}_1 \& \tilde{R}_3$ are zeros (except for both non-zeros) or alternatively one is non-zero and other one is zero, then

$$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) \text{ (In particular case)}$$

(b) If all the elements in $\tilde{R}_2 = 0$ and either of at least one element in both $\tilde{R}_1 \& \tilde{R}_3$ are zeros or alternatively one is non-zero and other and other one is zero and also both of three relations in all the elements are non-zeros, the

$$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) \neq (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) \text{ (In particular case)}$$

Verification of properties of composition of fuzzy relations

1. Verify $\tilde{R} \circ \tilde{o} = \tilde{o} \circ \tilde{R}$ If $\tilde{R} = \begin{bmatrix} 0.3 & 0.2 \\ 0.6 & 0.7 \end{bmatrix}$ and $\tilde{o} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$

Solution:

$$\tilde{R} \circ \tilde{o} = \begin{bmatrix} 0.3 & 0.2 \\ 0.6 & 0.7 \end{bmatrix} \circ \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.3,0), \min(0.2,0)\} & \max\{\min(0.3,0).\min(0.2,0)\} \\ \max\{\min(0.6,0), \min(0.7,0)\} & \max\{\min(0.6,0), \min(0.7,0)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0,0\} & \max\{0,0\} \\ \max\{0,0\} & \max\{0,0\} \end{bmatrix}$$

$$\tilde{R} \circ \tilde{o} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \quad \text{.........(1)}$$

25

$$\tilde{o} \circ \tilde{R} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \circ \begin{bmatrix} 0.3 & 0.2 \\ 0.6 & 0.7 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0,0.3), \min(0,0.6)\} & \max\{\min(0,0.2), \min(0,0.7)\} \\ \max\{\min(0,0.3), \min(0,0.6)\} & \max\{\min(0,0.2), \min(0,0.7)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0,0\} & \max\{0,0\} \\ \max\{0,0\} & \max\{0,0\} \end{bmatrix}$$

$$\tilde{o} \circ \tilde{R} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \quad \dots\dots(2)$$

$$\therefore (1) = (2)$$

$$\Rightarrow \tilde{R} \circ \tilde{o} = \tilde{o} \circ \tilde{R}$$

2. Verify $\tilde{R} \circ \tilde{I} = \tilde{I} \circ \tilde{R}$ if $\tilde{R} = \begin{bmatrix} 0.5 & 0.8 \\ 0.4 & 0.7 \end{bmatrix}$ and $\tilde{I} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

Solution:

$$\tilde{R} \circ \tilde{I} = \begin{bmatrix} 0.5 & 0.8 \\ 0.4 & 0.7 \end{bmatrix} \circ \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.5,1), \min(0.8,0)\} & \max\{\min(0.5,0), \min(0.8,1)\} \\ \max\{\min(0.4,1), \min(0.7,0)\} & \max\{\min(0.4,0), \min(0.7,1)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.5,0\} & \max\{0,0.8\} \\ \max\{0.4,0\} & \max\{0,0.7\} \end{bmatrix}$$

$$\tilde{R} \circ \tilde{I} = \begin{bmatrix} 0.5 & 0.8 \\ 0.4 & 0.7 \end{bmatrix} \quad \dots\dots(1)$$

$$\tilde{I} \circ \tilde{R} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \circ \begin{bmatrix} 0.5 & 0.8 \\ 0.4 & 0.7 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(1,0.5), \min(0,0.4)\} & \max\{\min(1,0.8), \min(0,0.7)\} \\ \max\{\min(0,0.5), \min(1,0.4)\} & \max\{\min(0,0.8), \min(1,0.7)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.5,0\} & \max\{0.8,0\} \\ \max\{0,0.4\} & \max\{0,0.7\} \end{bmatrix}$$

$$1 \circ \tilde{R} = \begin{bmatrix} 0.5 & 0.8 \\ 0.4 & 0.7 \end{bmatrix} \quad \text{........(2)}$$

$$\therefore \quad 1 = 2$$

$$\Rightarrow \tilde{R} \circ \tilde{I} = \tilde{I} \circ \tilde{R}$$

3. Verify $\tilde{R}_1 \circ \tilde{R}_2 = \tilde{R}_2 \circ \tilde{R}_1$ if $\tilde{R}_1 = \begin{bmatrix} 0.8 & 0.5 \\ 1.0 & 0.9 \end{bmatrix}$ and $\tilde{R}_2 = \begin{bmatrix} 0.6 & 0.2 \\ 0.0 & 0.7 \end{bmatrix}$

Solution:

$$\tilde{R}_1 \circ \tilde{R}_2 = \begin{bmatrix} 0.8 & 0.5 \\ 1.0 & 0.9 \end{bmatrix} \circ \begin{bmatrix} 0.6 & 0.2 \\ 0.0 & 0.7 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.8,0.6), \min(0.5,0.0)\} & \max\{\min(0.8,0.2), \min(0.5,0.7)\} \\ \max\{\min(1.0,0.6), \min(0.9,0.0)\} & \max\{\min(1.0,0.2), \min(0.9,0.7)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.6,0.0\} & \max\{0.2,0.5\} \\ \max\{0.6,0.0\} & \max\{0.2,0.7\} \end{bmatrix}$$

$$\tilde{R}_1 \circ \tilde{R}_2 = \begin{bmatrix} 0.6 & 0.5 \\ 0.6 & 0.7 \end{bmatrix} \quad \text{.........(1)}$$

$$\tilde{R}_2 \circ \tilde{R}_1 = \begin{bmatrix} 0.6 & 0.2 \\ 0.0 & 0.7 \end{bmatrix} \circ \begin{bmatrix} 0.8 & 0.5 \\ 1.0 & 0.9 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.6,0.8), \min(0.2,1.0)\} & \max\{\min(0.6,0.5), \min(0.2,0.9)\} \\ \max\{\min(0.0,0.8), \min(0.7,1.0)\} & \max\{\min(0.0,0.5), \min(0.7,0.9)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.6,0.2\} & \max\{0.5,0.2\} \\ \max\{0.0,0.7\} & \max\{0.0,0.7\} \end{bmatrix}$$

$$\tilde{R}_2 \circ \tilde{R}_1 = \begin{bmatrix} 0.6 & 0.5 \\ 0.7 & 0.7 \end{bmatrix} \quad \text{.........(2)}$$

$$\therefore (1) = (2)$$

$$\Rightarrow \tilde{R}_1 \circ \tilde{R}_2 = \tilde{R}_2 \circ \tilde{R}_1$$

4. $\tilde{R}_2 \subseteq \tilde{R}_3 \Rightarrow (\tilde{R}_1 \circ \tilde{R}_2) \subseteq (\tilde{R}_1 \circ \tilde{R}_3)$ if $\tilde{R}_1 = \begin{bmatrix} 0.3 & 0.6 \\ 0.4 & 0.1 \end{bmatrix}$ and $\tilde{R}_2 = \begin{bmatrix} 0.2 & 0.5 \\ 0.0 & 0.8 \end{bmatrix}$

$\tilde{R}_3 = \begin{bmatrix} 0.4 & 0.7 \\ 0.1 & 0..8 \end{bmatrix}$

Solution:

$\tilde{R}_1 \circ \tilde{R}_2 = \begin{bmatrix} 0.3 & 0.6 \\ 0.4 & 0.1 \end{bmatrix} \circ \begin{bmatrix} 0.2 & 0.5 \\ 0.0 & 0.8 \end{bmatrix}$

$= \begin{bmatrix} \max\{\min(0.3,0.2), \min(0.6,0.0)\} & \max\{\min(0.3,0.5), \min(0.6,0.8)\} \\ \max\{\min(0.4,0.2), \min(0.1,0.0)\} & \max\{\min(0.4,0.5), \min(0.1,0.8)\} \end{bmatrix}$

$= \begin{bmatrix} \max\{0.2,0.0\} & \max\{0.3,0.6\} \\ \max\{0.2,0.0\} & \max\{0.4,0.1\} \end{bmatrix}$

$\tilde{R}_1 \circ \tilde{R}_2 = \begin{bmatrix} 0.2 & 0.6 \\ 0.2 & 0.4 \end{bmatrix} \quad \ldots\ldots\ldots(1)$

$\tilde{R}_3 \circ \tilde{R}_1 = \begin{bmatrix} 0.3 & 0.6 \\ 0.4 & 0.1 \end{bmatrix} \circ \begin{bmatrix} 0.4 & 0.7 \\ 0.1 & 0.8 \end{bmatrix}$

$= \begin{bmatrix} \max\{\min(0.3,0.4), \min(0.6,0.1)\} & \max\{\min(0.3,0.7), \min(0.6,0.8)\} \\ \max\{\min(0.4,0.4), \min(0.1,0.1)\} & \max\{\min(0.4,0.7), \min(0.1,0.8)\} \end{bmatrix}$

$= \begin{bmatrix} \max\{0.3,0.1\} & \max\{0.3,0.6\} \\ \max\{0.4,0.1\} & \max\{0.4,0.1\} \end{bmatrix}$

$\tilde{R}_3 \circ \tilde{R}_1 = \begin{bmatrix} 0.3 & 0.6 \\ 0.4 & 0.4 \end{bmatrix} \quad \ldots\ldots\ldots(2)$

$\therefore (1) \subseteq (2)$

$\Rightarrow \tilde{R}_2 \subseteq \tilde{R}_3 \Rightarrow (\tilde{R}_1 \circ \tilde{R}_2) \subseteq (\tilde{R}_1 \circ \tilde{R}_3)$

5. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \circ \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \circ \tilde{R}_3$, if $\tilde{R}_1 = \begin{bmatrix} 0.7 & 0.2 \\ 0.4 & 0.8 \end{bmatrix}$, $\tilde{R}_2 = \begin{bmatrix} 0.2 & 0.6 \\ 0.0 & 0.1 \end{bmatrix}$ and

$$\tilde{R}_3 = \begin{bmatrix} 0.3 & 0.7 \\ 1.0 & 0.5 \end{bmatrix}$$

Solution:

$$(\tilde{R}_2 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.6 \\ 0.0 & 0.1 \end{bmatrix} \circ \begin{bmatrix} 0.3 & 0.7 \\ 1.0 & 0.5 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.2,0.3),\min(0.6,1.0)\} & \max\{\min(0.7,0.5),\min(0.6,0.5)\} \\ \max\{\min(0.0,0.3),\min(0.1,1.0)\} & \max\{\min(0.0,0.7),\min(0.1,0.5)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2,0.6\} & \max\{0.2,0.5\} \\ \max\{0.0,0.1\} & \max\{0.0,0.1\} \end{bmatrix}$$

$$(\tilde{R}_2 \circ \tilde{R}_3) = \begin{bmatrix} 0.6 & 0.5 \\ 0.1 & 0.1 \end{bmatrix} \quad\ldots\ldots\ldots(1)$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \circ \tilde{R}_3) = \begin{bmatrix} 0.7 & 0.2 \\ 0.4 & 0.8 \end{bmatrix} \circ \begin{bmatrix} 0.6 & 0.5 \\ 0.1 & 0.1 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.7,0.6),\min(0.2,0.1)\} & \max\{\min(0.7,0.5),\min(0.2,0.1)\} \\ \max\{\min(0.4,0.6),\min(0.8,0.1)\} & \max\{\min(0.4,0.5),\min(0.8,0.1)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.6,0.2\} & \max\{0.5,0.2\} \\ \max\{0.4,0.1\} & \max\{0.4,0.1\} \end{bmatrix}$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \circ \tilde{R}_3) = \begin{bmatrix} 0.6 & 0.5 \\ 0.4 & 0.4 \end{bmatrix} \quad\ldots\ldots\ldots(2)$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.7 & 0.2 \\ 0.4 & 0.8 \end{bmatrix} \circ \begin{bmatrix} 0.2 & 0.6 \\ 0.0 & 0.1 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.7,0.2),\min(0.2,0.0)\} & \max\{\min(0.7,0.6),\min(0.2,0.1)\} \\ \max\{\min(0.4,0.2),\min(0.8,0.0)\} & \max\{\min(0.4,0.6),\min(0.8,0.1)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2,0.0\} & \max\{0.6,0.1\} \\ \max\{0.2,0.0\} & \max\{0.4,0.1\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.2 & 0.6 \\ 0.2 & 0.4 \end{bmatrix} \quad\ldots\ldots\ldots(3)$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \circ \tilde{R}_1 = \begin{bmatrix} 02 & 0.6 \\ 0.2 & 0.4 \end{bmatrix} \circ \begin{bmatrix} 0.3 & 0.7 \\ 1.0 & 0.5 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.2,0.3), \min(0.6,1.0)\} & \max\{\min(0.2,0.7), \min(0.6,0.5)\} \\ \max\{\min(0.2,0.3), \min(0.4,1.0)\} & \max\{\min(0.2,0.7), \min(0.4,0.5)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2,0.6\} & \max\{0.2,0.5\} \\ \max\{0.2,0.4\} & \max\{0.2,0.4\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \circ \tilde{R}_1 = \begin{bmatrix} 0.6 & 0.5 \\ 0.4 & 0.4 \end{bmatrix} \quad \ldots\ldots\ldots(4)$$

$$\therefore (2) = (4)$$

$$\Rightarrow \tilde{R}_1 \circ (\tilde{R}_2 \circ \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \circ \tilde{R}_3$$

6. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3)$ if $\tilde{R}_1 = \begin{bmatrix} 0.1 & 02 \\ 0.3 & 0.4 \end{bmatrix}$, $\tilde{R}_2 = \begin{bmatrix} 0.0 & 0.1 \\ 0.4 & 0.5 \end{bmatrix}$ and $\tilde{R}_3 = \begin{bmatrix} 0.0 & 0.2 \\ 0.5 & 0.6 \end{bmatrix}$

Solution:

$$(\tilde{R}_2 \cup \tilde{R}_3) = \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.4 \end{bmatrix} \cup \begin{bmatrix} 0.0 & 0.2 \\ 0.5 & 0.6 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.0,0.0\} & \max\{0.1,0.2\} \\ \max\{0.4,0.5\} & \max\{0.5,0.6\} \end{bmatrix}$$

$$(\tilde{R}_2 \cup \tilde{R}_3) = \begin{bmatrix} 0.0 & 0.2 \\ 0.5 & 0.6 \end{bmatrix} \quad \ldots\ldots\ldots(1)$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = \begin{bmatrix} 0.1 & 0.2 \\ 0.3 & 0.4 \end{bmatrix} \circ \begin{bmatrix} 0.0 & 0.2 \\ 0.5 & 0.6 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.1,0.0), \min(0.2,0.5)\} & \max\{\min(0.1,0.2), \min(0.2,0.6)\} \\ \max\{\min(0.3,0.0), \min(0.4,0.5)\} & \max\{\min(0.3,0.2), \min(0.4,0.6)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.0,0.2\} & \max\{0.1,0.2\} \\ \max\{0.0,0.4\} & \max\{0.2,0.4\} \end{bmatrix}$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.4 & 0.4 \end{bmatrix} \quad \ldots\ldots(2)$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.1 & 0.2 \\ 0.3 & 0.4 \end{bmatrix} \circ \begin{bmatrix} 0.0 & 0.1 \\ 0.4 & 0.5 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.1,0.0), \min(0.2,0.4)\} & \max\{\min(0.1,0.1), \min(0.2,0.5)\} \\ \max\{\min(0.3,0.0), \min(0.4,0.1)\} & \max\{\min(0.3,0.1), \min(0.4,0.5)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.0,0.2\} & \max\{0.1,0.2\} \\ \max\{0.0,0.1\} & \max\{0.1,0.4\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.2 & 0.2 \\ 0.1 & 0.4 \end{bmatrix} \dots\dots(3)$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.1 & 0.2 \\ 0.3 & 0.4 \end{bmatrix} \circ \begin{bmatrix} 0.0 & 0.2 \\ 0.5 & 0.6 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.1,0.0), \min(0.2,0.5)\} & \max\{\min(0.1,0.2), \min(0.2,0.6)\} \\ \max\{\min(0.3,0.0), \min(0.4,0.5)\} & \max\{\min(0.3,0.2), \min(0.4,0.6)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.0,0.2\} & \max\{0.1,0.2\} \\ \max\{0.0,0.4\} & \max\{0.2,0.4\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.4 & 0.4 \end{bmatrix} \dots\dots(4)$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.1 & 0.4 \end{bmatrix} \cup \begin{bmatrix} 0.2 & 0.2 \\ 0.4 & 0.4 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2,0.2\} & \max\{0.2,0.2\} \\ \max\{0.1,0.4\} & \max\{0.4,0.4\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.4 & 0.4 \end{bmatrix} \dots\dots(5)$$

$$\therefore (2) = (5)$$

$$\Rightarrow \tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3)$$

7. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$ If $\tilde{R}_1 = \begin{bmatrix} 0.3 & 0.2 \\ 0.1 & 0.0 \end{bmatrix}$, $\tilde{R}_2 = \begin{bmatrix} 0.4 & 0.5 \\ 0.6 & 0.7 \end{bmatrix}$ and

$\tilde{R}_3 = \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.2 \end{bmatrix}$

Solution:

$(\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.4 & 0.5 \\ 0.6 & 0.7 \end{bmatrix} \cap \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.2 \end{bmatrix}$

$= \begin{bmatrix} \min\{0.4, 0.0\} & \min\{0.5, 0.1\} \\ \min\{0.6, 0.3\} & \min\{0.7, 0.2\} \end{bmatrix}$

$(\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.2 \end{bmatrix}$ .... (1)

$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.3 & 0.2 \\ 0.1 & 0.0 \end{bmatrix} \circ \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.2 \end{bmatrix}$

$= \begin{bmatrix} \max\{\min(0.3, 0.0), \min(0.2, 0.3)\} & \max\{\min(0.3, 0.1), \min(0.2, 0.2)\} \\ \max\{\min(0.1, 0.0), \min(0.0, 0.3)\} & \max\{\min(0.1, 0.1), \min(0.0, 0.2)\} \end{bmatrix}$

$= \begin{bmatrix} \max\{0.0, 0.2\} & \max\{0.1, 0.2\} \\ \max\{0.0, 0.0\} & \max\{0.1, 0.0\} \end{bmatrix}$

$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.0 & 0.1 \end{bmatrix}$ .... (2)

$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.3 & 0.2 \\ 0.1 & 0.0 \end{bmatrix} \circ \begin{bmatrix} 0.4 & 0.5 \\ 0.6 & 0.7 \end{bmatrix}$

$= \begin{bmatrix} \max\{\min(0.3, 0.4), \min(0.2, 0.6)\} & \max\{\min(0.3, 0.5), \min(0.2, 0.7)\} \\ \max\{\min(0.1, 0.4), \min(0.0, 0.6)\} & \max\{\min(0.1, 0.5), \min(0.0, 0.7)\} \end{bmatrix}$

$= \begin{bmatrix} \max\{0.3, 0.2\} & \max\{0.3, 0.2\} \\ \max\{0.1, 0.0\} & \max\{0.1, 0.0\} \end{bmatrix}$

$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.3 & 0.3 \\ 0.1 & 0.1 \end{bmatrix}$ .... (3)

$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.3 & 0.2 \\ 0.1 & 0.0 \end{bmatrix} \circ \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.2 \end{bmatrix}$

Scanned with OKEN Scanner

$$= \begin{bmatrix} \max\{\min(0.3,0.0), \min(0.2,0.3)\} & \max\{\min(0.3,0.1), \min(0.2,0.2)\} \\ \max\{\min(0.1,0.0), \min(0.0,0.3)\} & \max\{\min(0.1,0.1), \min(0.0,0.2)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.0,0.2\} & \max\{0.1,0.2\} \\ \max\{0.0,0.0\} & \max\{0.1,0.0\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_1) = \begin{bmatrix} 0.2 & 0.2 \\ 0.0 & 0.1 \end{bmatrix} \quad \text{.......... (4)}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_1) = \begin{bmatrix} 0.3 & 0.3 \\ 0.1 & 0.1 \end{bmatrix} \cap \begin{bmatrix} 0.2 & 0.2 \\ 0.0 & 0.1 \end{bmatrix}$$

$$= \begin{bmatrix} \min\{0.3,0.2\} & \min\{0.3,0.2\} \\ \min\{0.1,0.0\} & \min\{0.1,0.1\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.0 & 0.1 \end{bmatrix} \quad \text{.......... (5)}$$

$$\therefore \quad (2) = (5)$$

$$\Rightarrow \quad \tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$$

8. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$ if $\tilde{R}_1 = \begin{bmatrix} 0.2 & 0.0 \\ 0.3 & 0.4 \end{bmatrix}$, $\tilde{R}_2 = \begin{bmatrix} 0.6 & 0.3 \\ 0.1 & 0.8 \end{bmatrix}$

and $\tilde{R}_3 = \begin{bmatrix} 0.4 & 0.7 \\ 1.0 & 0.3 \end{bmatrix}$

Solution:

$$(\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.6 & 0.3 \\ 0.1 & 0.8 \end{bmatrix} \cap \begin{bmatrix} 0.4 & 0.7 \\ 1.0 & 0.3 \end{bmatrix}$$

$$= \begin{bmatrix} \min\{0.6,0.4\} & \min\{0.3,0.7\} \\ \min\{0.1,1.0\} & \min\{0.8,0.3\} \end{bmatrix}$$

$$(\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.4 & 0.3 \\ 0.1 & 0.3 \end{bmatrix} \quad \text{........(1)}$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.0 \\ 0.3 & 0.4 \end{bmatrix} \circ \begin{bmatrix} 0.4 & 0.3 \\ 0.1 & 0.3 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.2,0.4), \min(0.0,0.1)\} & \max\{\min(0.2,0.3), \min(0.0,0.3)\} \\ \max\{\min(0.3,0.4), \min(0.4,0.1)\} & \max\{\min(0.3,0.3), \min(0.4,0.3)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2, 0.0\} & \max\{0.2, 0.0\} \\ \max\{0.3, 0.1\} & \max\{0.3, 0.3\} \end{bmatrix}$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.3 & 0.3 \end{bmatrix} \quad \dots\dots\dots(2)$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.2 & 0.0 \\ 0.3 & 0.4 \end{bmatrix} \circ \begin{bmatrix} 0.6 & 0.3 \\ 0.1 & 0.8 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.2, 0.6), \min(0.0, 0.1)\} & \max\{\min(0.2, 0.3)\ \min(0.0, 0.8)\} \\ \max\{\min(0.3, 0.6), \min(0.4, 0.1)\} & \max\{\min(0.3, 0.3), \min(0.4, 0.8)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2, 0.0\} & \max\{0.2, 0.0\} \\ \max\{0.3, 0.1\} & \max\{0.3, 0.4\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.2 & 0.2 \\ 0.3 & 0.4 \end{bmatrix} \quad \dots\dots\dots(3)$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.0 \\ 0.3 & 0.4 \end{bmatrix} \circ \begin{bmatrix} 0.4 & 0.7 \\ 1.0 & 0.3 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.2, 0.4), \min(0.0, 1.0)\} & \max\{\min(0.2, 0.7), \min(0.0, 0.3)\} \\ \max\{\min(0.3, 0.4), \min(0.4, 0.1)\} & \max\{\min(0.3, 0.7), \min(0.4, 0.3)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2, 0.0\} & \max\{0.2, 0.0\} \\ \max\{0.3, 0.1\} & \max\{0.3, 0.3\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.3 & 0.3 \end{bmatrix} \quad \dots\dots\dots(4)$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.3 & 0.4 \end{bmatrix} \cap \begin{bmatrix} 0.2 & 0.2 \\ 0.3 & 0.3 \end{bmatrix}$$

$$= \begin{bmatrix} \min\{0.2, 0.2\} & \min\{0.2, 0.2\} \\ \min\{0.3, 0.3\} & \min\{0.4, 0.3\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.3 & 0.3 \end{bmatrix} \quad \dots\dots\dots(5)$$

$$\therefore (2) = (5)$$

$$\Rightarrow \tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$$

9. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) \neq (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$ if $\tilde{R}_1 = \begin{bmatrix} 0.0 & 0.2 \\ 0.6 & 0.7 \end{bmatrix}$,

$\tilde{R}_2 = \begin{bmatrix} 0.4 & 0.2 \\ 0.3 & 0.9 \end{bmatrix}$ and $\tilde{R}_3 = \begin{bmatrix} 0.1 & 0.5 \\ 0.8 & 0.3 \end{bmatrix}$

Solution:

$(\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.4 & 0.2 \\ 0.6 & 0.7 \end{bmatrix} \cap \begin{bmatrix} 0.1 & 0.5 \\ 0.8 & 0.3 \end{bmatrix}$

$= \begin{bmatrix} \min\{0.4,0.1\} & \min\{0.0,0.5\} \\ \min\{0.3,0.8\} & \min\{0.9,0.3\} \end{bmatrix}$

$(\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.1 & 0.0 \\ 0.3 & 0.3 \end{bmatrix}$ ....(1)

$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.0 & 0.2 \\ 0.6 & 0.7 \end{bmatrix} \circ \begin{bmatrix} 0.1 & 0.0 \\ 0.3 & 0.3 \end{bmatrix}$

$= \begin{bmatrix} \max\{\min(0.0,0.1), \min(0.2,0.3)\} & \max\{\min(0.0,0.0), \min(0.2,0.3)\} \\ \max\{\min(0.6,0.1), \min(0.7,0.3)\} & \max\{\min(0.6,0.0), \min(0.7,0.3)\} \end{bmatrix}$

$= \begin{bmatrix} \max\{0.0,0.2\} & \max\{0.0,0.2\} \\ \max\{0.1,0.3\} & \max\{0.0,0.3\} \end{bmatrix}$

$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.3 & 0.3 \end{bmatrix}$ ....(2)

$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.0 & 0.2 \\ 0.6 & 0.7 \end{bmatrix} \circ \begin{bmatrix} 0.4 & 0.0 \\ 0.3 & 0.9 \end{bmatrix}$

$= \begin{bmatrix} \max\{\min(0.0,0.4), \min(0.2,0.3)\} & \max\{\min(0.0,0.0), \min(0.2,0.9)\} \\ \max\{\min(0.6,0.4), \min(0.7,0.3)\} & \max\{\min(0.6,0.0), \min(0.7,0.9)\} \end{bmatrix}$

$= \begin{bmatrix} \max\{0.0,0.2\} & \max\{0.0,0.2\} \\ \max\{0.4,0.3\} & \max\{0.0,0.7\} \end{bmatrix}$

$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.2 & 0.2 \\ 0.4 & 0.7 \end{bmatrix}$ ....(3)

$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.0 & 0.2 \\ 0.4 & 0.7 \end{bmatrix} \circ \begin{bmatrix} 0.1 & 0.5 \\ 0.8 & 0.3 \end{bmatrix}$

$= \begin{bmatrix} \max\{\min(0.0,0.1), \min(0.2,0.8)\} & \max\{\min(0.0,0.5), \min(0.2,0.3)\} \\ \max\{\min(0.4,0.1), \min(0.7,0.8)\} & \max\{\min(0.4,0.5), \min(0.7,0.3)\} \end{bmatrix}$

$$= \begin{bmatrix} \max\{0.0,02\} & \max\{0.0,0.2\} \\ \max\{0.1,0.7\} & \max\{0.4,0.3\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.7 & 0.4 \end{bmatrix} \quad \ldots\ldots\ldots(4)$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.4 & 0.7 \end{bmatrix} \cap \begin{bmatrix} 0.2 & 0.2 \\ 0.7 & 0.4 \end{bmatrix}$$

$$= \begin{bmatrix} \min\{0.2,0.2\} & \min\{0.2,0.2\} \\ \min\{0.4,0.7\} & \min\{0.7,0.4\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 \\ 0.4 & 0.4 \end{bmatrix} \quad \ldots\ldots\ldots(5)$$

$$\therefore (2) \neq (5)$$

$$\Rightarrow \tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) \neq (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$$

10. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) \neq (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$ if $\tilde{R}_1 = \begin{bmatrix} 0.2 & 0.3 \\ 0.4 & 0.6 \end{bmatrix}$, $\tilde{R}_2 = \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.7 \end{bmatrix}$ and $\tilde{R}_3 = \begin{bmatrix} 0.4 & 0.6 \\ 0.9 & 0.2 \end{bmatrix}$

Solution:

$$(\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.7 \end{bmatrix} \cap \begin{bmatrix} 0.4 & 0.6 \\ 0.9 & 0.2 \end{bmatrix}$$

$$= \begin{bmatrix} \min\{0.0,0.4\} & \min\{0.1,0.6\} \\ \min\{0.3,0.9\} & \min\{0.7,0.2\} \end{bmatrix}$$

$$(\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.2 \end{bmatrix} \quad \ldots\ldots\ldots(1)$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.3 \\ 0.4 & 0.6 \end{bmatrix} \circ \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.2 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.2,0.0),\min(0.3,0.3)\} & \max\{\min(0.2,0.1),\min(0.3,0.2)\} \\ \max\{\min(0.4,0.0),\min(0.6,0.3)\} & \max\{\min(0.4,0.1),\min(0.6,0.2)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.0,0.3\} & \max\{0.1,0.2\} \\ \max\{0.0,0.3\} & \max\{0.1,0.2\} \end{bmatrix}$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = \begin{bmatrix} 0.3 & 0.2 \\ 0.3 & 0.2 \end{bmatrix} \quad \text{..........(2)}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.2 & 0.3 \\ 0.4 & 0.6 \end{bmatrix} \circ \begin{bmatrix} 0.0 & 0.1 \\ 0.3 & 0.7 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.2,0.0), \min(0.3,0.3)\} & \max\{\min(0.2,0.1), \min(0.3,0.7)\} \\ \max\{\min(0.4,0.0), \min(0.6,0.3)\} & \max\{\min(0.4,0.1), \min(0.6,0.7)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.0,0.3\} & \max\{0.1,0.3\} \\ \max\{0.0,0.3\} & \max\{0.1,0.6\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.3 & 0.3 \\ 0.3 & 0.6 \end{bmatrix} \quad \text{..........(3)}$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.3 \\ 0.4 & 0.6 \end{bmatrix} \circ \begin{bmatrix} 0.4 & 0.6 \\ 0.9 & 0.2 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{\min(0.2,0.4), \min(0.3,0.9)\} & \max\{\min(0.2,0.6), \min(0.3,0.2)\} \\ \max\{\min(0.4,0.4), \min(0.6,0.9)\} & \max\{\min(0.4,0.6), \min(0.6,0.2)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2,0.3\} & \max\{0.2,0.2\} \\ \max\{0.4,0.6\} & \max\{0.4,0.2\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.3 & 0.2 \\ 0.6 & 0.4 \end{bmatrix} \quad \text{.........(4)}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.3 & 0.3 \\ 0.3 & 0.6 \end{bmatrix} \cap \begin{bmatrix} 0.3 & 0.2 \\ 0.6 & 0.4 \end{bmatrix}$$

$$= \begin{bmatrix} \min\{0.3,0.3\} & \min\{0.3,0.2\} \\ \min\{0.3,0.6\} & \min\{0.6,0.4\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.3 & 0.2 \\ 0.3 & 0.4 \end{bmatrix} \quad \text{..........(5)}$$

$$\therefore (2) \neq (5)$$

$$\Rightarrow \tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) \neq (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$$

11. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3)$

$$\tilde{R}_1 = \begin{bmatrix} 0.2 & 0.0 & 0.7 \\ 0.4 & 0.6 & 0.1 \\ 0.5 & 0.3 & 0.8 \end{bmatrix}, \quad \tilde{R}_2 = \begin{bmatrix} 0.7 & 0.5 & 0.6 \\ 0.3 & 0.9 & 0.0 \\ 0.1 & 0.0 & 0.4 \end{bmatrix} \text{ and } \tilde{R}_3 = \begin{bmatrix} 0.1 & 0.7 & 0.3 \\ 0.5 & 0.8 & 0.6 \\ 0.2 & 0.9 & 0.1 \end{bmatrix}$$

Solution:

$$(\tilde{R}_2 \cup \tilde{R}_3) = \begin{bmatrix} 0.7 & 0.5 & 0.6 \\ 0.3 & 0.9 & 0.0 \\ 0.1 & 0.0 & 0.4 \end{bmatrix} \cup \begin{bmatrix} 0.1 & 0.7 & 0.3 \\ 0.5 & 0.8 & 0.6 \\ 0.2 & 0.9 & 0.1 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.7,0.1\} & \max\{0.5,0.7\} & \max\{0.6,0.3\} \\ \max\{0.3,0.5\} & \max\{0.9,0.8\} & \max\{0.0,0.6\} \\ \max\{0.1,0.2\} & \max\{0.0,0.9\} & \max\{0.4,0.1\} \end{bmatrix}$$

$$(\tilde{R}_2 \cup \tilde{R}_3) = \begin{bmatrix} 0.7 & 0.7 & 0.6 \\ 0.5 & 0.9 & 0.6 \\ 0.2 & 0.9 & 0.4 \end{bmatrix} \quad \dots\dots\dots (1)$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.0 & 0.7 \\ 0.4 & 0.6 & 0.1 \\ 0.5 & 0.3 & 0.8 \end{bmatrix} \circ \begin{bmatrix} 0.7 & 0.7 & 0.6 \\ 0.5 & 0.9 & 0.6 \\ 0.2 & 0.9 & 0.4 \end{bmatrix} =$$

$$\begin{bmatrix} \max\{\min(0.2,0.7),\min(0.0,0.5),\min(0.7,0.2)\} & \max\{\min(0.2,0.7),\min(0.0,0.9),\min(0.7,0.9)\} & \max\{\min(0.2,0.6),\min(0.0,0.6),\min(0.7,0.4)\} \\ \max\{\min(0.4,0.7),\min(0.6,0.5),\min(0.1,0.2)\} & \max\{\min(0.4,0.7),\min(0.6,0.9),\min(0.1,0.9)\} & \max\{\min(0.4,0.6),\min(0.6,0.6),\min(0.1,0.4)\} \\ \max\{\min(0.5,0.7),\min(0.3,0.5),\min(0.8,0.2)\} & \max\{\min(0.5,0.7),\min(0.3,0.9),\min(0.8,0.9)\} & \max\{\min(0.5,0.6),\min(0.3,0.6),\min(0.8,0.4)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2,0.0,0.2\} & \max\{0.0,0.2,0.7\} & \max\{0.2,0.0,0.4\} \\ \max\{0.4,0.5,0.1\} & \max\{0.4,0.6,0.1\} & \max\{0.4,0.6,0.1\} \\ \max\{0.5,0.3,0.2\} & \max\{0.5,0.3,0.8\} & \max\{0.5,0.3,0.4\} \end{bmatrix}$$

$$\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.7 & 0.4 \\ 0.5 & 0.6 & 0.6 \\ 0.5 & 0.8 & 0.5 \end{bmatrix} \quad \dots\dots\dots(2)$$

38

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.2 & 0.0 & 0.7 \\ 0.4 & 0.6 & 0.1 \\ 0.5 & 0.3 & 0.8 \end{bmatrix} \circ \begin{bmatrix} 0.7 & 0.5 & 0.6 \\ 0.3 & 0.9 & 0.0 \\ 0.1 & 0.0 & 0.4 \end{bmatrix} =$$

$$\begin{bmatrix} \max\{\min(0.2,.07),\min(0.0,0.3),\min(0.7,0.1)\} & \max\{\min(0.2,0.5),\min(0.0,0.9),\min(0.7,0.0)\} & \max\{\min(0.2,0.6),\min(0.0,0.0),\min(0.7,0.4)\} \\ \max\{\min(0.4,0.7),\min(0.6,0.3),\min(0.1,0.1)\} & \max\{\min(0.4,0.5),\min(0.6,0.9),\min(0.1,0.0)\} & \max\{\min(0.4,0.6),\min(0.6,0.0),\min(0.1,0.4)\} \\ \max\{\min(0.5,0.7),\min(0.3,0.3),\min(0.8,0.1)\} & \max\{\min(0.5,0.5),\min(0.3,0.9),\min(0.8,0.0)\} & \max\{\min(0.5,0.6),\min(0.3,0.0),\min(0.8,0.4)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2,0.0,0.1\} & \max\{0.2,0.0,0.0\} & \max\{0.2,0.0,0.4\} \\ \max\{0.4,0.3,0.1\} & \max\{0.4,0.6,0.0\} & \max\{0.4,0.0,0.1\} \\ \max\{0.5,0.3,0.1\} & \max\{0.5,0.3,0.0\} & \max\{0.5,0.0,0.4\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) = \begin{bmatrix} 0.2 & 0.2 & 0.4 \\ 0.4 & 0.6 & 0.4 \\ 0.5 & 0.5 & 0.5 \end{bmatrix} \quad \ldots\ldots\ldots(3)$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.0 & 0.7 \\ 0.4 & 0.6 & 0.1 \\ 0.5 & 0.3 & 0.8 \end{bmatrix} \circ \begin{bmatrix} 0.1 & 0.7 & 0.3 \\ 0.5 & 0.8 & 0.6 \\ 0.2 & 0.9 & 0.1 \end{bmatrix} =$$

$$\begin{bmatrix} \max\{\min(0.2,.01),\min(0.0,0.5),\min(0.7,0.2)\} & \max\{\min(0.2,0.7),\min(0.0,0.8),\min(0.7,0.9)\} & \max\{\min(0.2,0.3),\min(0.0,0.6),\min(0.7,0.1)\} \\ \max\{\min(0.4,0.1),\min(0.6,0.5),\min(0.1,0.2)\} & \max\{\min(0.4,0.7),\min(0.6,0.8),\min(0.1,0.9)\} & \max\{\min(0.4,0.3),\min(0.6,0.6),\min(0.1,0.1)\} \\ \max\{\min(0.5,0.1),\min(0.3,0.5),\min(0.8,0.2)\} & \max\{\min(0.5,0.7),\min(0.3,0.8),\min(0.8,0.9)\} & \max\{\min(0.5,0.3),\min(0.3,0.6),\min(0.8,0.1)\} \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.1,0.0,0.2\} & \max\{0.2,0.0,0.7\} & \max\{0.2,0.0,0.1\} \\ \max\{0.1,0.5,0.1\} & \max\{0.4,0.6,0.1\} & \max\{0.3,0.6,0.1\} \\ \max\{0.1,0.3,0.2\} & \max\{0.5,0.3,0.8\} & \max\{0.3,0.3,0.1\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.7 & 0.2 \\ 0.5 & 0.6 & 0.6 \\ 0.3 & 0.8 & 0.3 \end{bmatrix} \quad \ldots\ldots\ldots(4)$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.2 & 0.4 \\ 0.4 & 0.6 & 0.4 \\ 0.5 & 0.5 & 0.5 \end{bmatrix} \cup \begin{bmatrix} 0.2 & 0.7 & 0.2 \\ 0.5 & 0.6 & 0.6 \\ 0.3 & 0.8 & 0.3 \end{bmatrix}$$

$$= \begin{bmatrix} \max\{0.2,0.2\} & \max\{0.2,0.7\} & \max\{0.4,0.2\} \\ \max\{0.4,0.5\} & \max\{0.6,0.6\} & \max\{0.4,0.6\} \\ \max\{0.5,0.3\} & \max\{0.5,0.8\} & \max\{0.5,0.3\} \end{bmatrix}$$

$$(\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3) = \begin{bmatrix} 0.2 & 0.7 & 0.4 \\ 0.5 & 0.6 & 0.6 \\ 0.5 & 0.8 & 0.5 \end{bmatrix} \quad \ldots\ldots\ldots(5)$$

$$\therefore (2) = (5)$$

$$\Rightarrow \tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3)$$

Exercise problems:

1. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$ if

$$\tilde{R}_1 = \begin{bmatrix} 0.1 & 0.0 \\ 0.3 & 0.4 \end{bmatrix}, \quad \tilde{R}_2 = \begin{bmatrix} 0.7 & 0.4 \\ 0.8 & 1.0 \end{bmatrix} \text{ and } \quad \tilde{R}_3 = \begin{bmatrix} 0.6 & 0.0 \\ 0.3 & 0.7 \end{bmatrix}$$

2. Verity $\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3)$ if

$$\tilde{R}_1 = \begin{bmatrix} 0.4 & 0.2 \\ 0.0 & 0.5 \end{bmatrix}, \quad \tilde{R}_2 = \begin{bmatrix} 0.3 & 0.8 \\ 0.2 & 0.6 \end{bmatrix} \text{ and } \quad \tilde{R}_3 = \begin{bmatrix} 0.7 & 0.9 \\ 0.5 & 0.4 \end{bmatrix}$$

3. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) \neq (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$ if

$$\tilde{R}_1 = \begin{bmatrix} 0.2 & 0.0 \\ 0.3 & 0.4 \end{bmatrix}, \quad \tilde{R}_2 = \begin{bmatrix} 0.0 & 0.5 \\ 0.3 & 0.7 \end{bmatrix} \text{ and } \quad \tilde{R}_3 = \begin{bmatrix} 0.9 & 0.1 \\ 0.0 & 0.3 \end{bmatrix}$$

4. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cap \tilde{R}_3) \neq (\tilde{R}_1 \circ \tilde{R}_2) \cap (\tilde{R}_1 \circ \tilde{R}_3)$ if

$$\tilde{R}_1 = \begin{bmatrix} 0.8 & 0.5 \\ 1.0 & 0.9 \end{bmatrix}, \quad \tilde{R}_2 = \begin{bmatrix} 0.6 & 0.2 \\ 0.0 & 0.7 \end{bmatrix} \text{ and } \tilde{R}_3 = \begin{bmatrix} 0.0 & 1.0 \\ 0.4 & 0.3 \end{bmatrix}$$

5. Verify $\tilde{R}_1 \circ (\tilde{R}_2 \cup \tilde{R}_3) = (\tilde{R}_1 \circ \tilde{R}_2) \cup (\tilde{R}_1 \circ \tilde{R}_3)$ if

$$\tilde{R}_1 = \begin{bmatrix} 1.0 & 0.6 \\ 0.5 & 0.2 \end{bmatrix}, \quad \tilde{R}_2 = \begin{bmatrix} 0.8 & 0.1 \\ 0.7 & 0.4 \end{bmatrix} \text{ and } \quad \tilde{R}_3 = \begin{bmatrix} 0.5 & 0.9 \\ 0.3 & 0.7 \end{bmatrix}$$

CONCLUSION

In this paper , we have seen some definitions and basic operation related on fuzzy relations. Next the composition of fuzzy relations are defined in two ways such as max-min composition and max-product composition with example. The max-min composition and max-product composition are two compositions of fuzzy relations which is being made use in this paper to introduce new properties of composition of fuzzy relations which we have verified by solving a suitable problems with the newly introduced properties and have given the solution for the problems .

BIBLIOGRAPHY

[1] Anjan Mukherjee and S.Bhattacharya, "Fuzzy set and Fuzzy Topology" Department of Mathematics, Tripura University, Tripura.

[2] Dr.S.Arumugam and A.Thangapandi Isaac, "Modern Algebra" Department of mathematics,Manonmaniam Sundaranar University, Tirunelveli

[3] Bezdek, J.C and Harris, J.D., Fuzzy partitions and relations, Fuzzy sets and systems, 1 (1978), 111-127.

[4] Buckley, E.E., An introduction to fuzzy logic and fuzzy sets. Advances in soft Computing Series, Springer-verlag, Berlin Heidelberg New York , 2002.

[5] Cornelis, C, De cock ,M , and kerre, E.E.,Intuitionistic fuzzy rough sets at the crossroads of imperfect knowledge , Expert Syst., vol.20, no.5,pp.260-269,2003.

[6] Dubios ,D and Prade ,H.,Rough fuzzy sets and fuzzy rough sets , Int. J.Gen .Syst., vol .17,pp.191-208,1990.

[7] George J.Klir,Tina A.Floger ,Fuzzy sets , Uncertainty, And Information published by person Education ,Inc,publishing as Prentice Hall (1988).

[8] Gyanendra kumar panda ,Surendra Prasad Jena ,On the Theory of Fuzzy Relations, ISSN (print):2395-7794, (online): 2395-7794, volume -2,Issue-4,2016.

[9] Nobuhara,H and Hirota,K., A solution for Eigen Fuzzy sets of Adjoint max-min composition and its Application to image Analysis, IEEE,WISP, Budapest Hungary , vol.2,pp. 27-30,Sept.2003.

[10] Ovchinnikov ,S., An introduction to fuzzy relations, Fundamental of Fuzzy sets ,The handbook of fuzzy sets series , vol. 7 (2000), springer.

[11] Sanchez,E., Eigen Fuzzy Sets Fuzzy Relations,Journal of Mathematical Analysis and Applications, vol. 81 ,pp. 399-421,1981

[12]   Timothy J Ross, Fuzzy Logic with Engineering Applications ,Third Edition (2010), John Wiley&Sons, Ltd.

[13] Zadeh, L.A,Fuzzy   Sets,Lnform.Control.8(1965),338-353 .12.

[14] Zimmeramann, H.J., Fuzzy set theory and its applications, 2ndEd., Kluwer Acadwmic publishers(1991).

[15] Zimmeramann, H.J., Fuzzy relations and Fuzzy graphs, Fuzzy set theory   and its applications, Springer Netherlands (2001), 71-91.

Example: 2.10

The fuzzy relation

$$\tilde{R} = \begin{cases} ((x_1, y_1), 0), ((x_1, y_2), 0.1), ((x_1, y_3), 0.2), \\ ((x_2, y_1), 0.7), ((x_2, y_2), 0.2), ((x_2, y_3), 0.3), \\ ((x_3, y_1), 1), ((x_3, y_2), 0.6), ((x_3, y_3, 0.2) \end{cases}$$

Can also given by the table as follows:

$\tilde{R} =$

X \ Y	y_1	y_2	y_3
x_1	0	0.1	0.2
x_2	0.7	0.2	0.3
x_3	1	0.6	0.2

Find membership function.

Solution:

The numbers in the cells are located at the intersection of rows and columns. Then the values of the membership function as follows:

$\mu_{\tilde{R}}(x_1, y_1) = 0$, $\mu_{\tilde{R}}(x_1, y_2) = 0.1$,

$\mu_{\tilde{R}}(x_1, y_3) = 0.2$, $\mu_{\tilde{R}}(x_2, y_1) = 0.7$,

$\mu_{\tilde{R}}(x_2, y_2) = 0.2$, $\mu_{\tilde{R}}(x_2, y_3) = 0.3$,

$\mu_{\tilde{R}}(x_3, y_1) = 1$, $\mu_{\tilde{R}}(x_3, y_2) = 0.6$,

$\mu_{\tilde{R}}(x_3, y_3) = 0.2$.

Scanned with OKEN Scanner

GANESAR COLLEGE OF ARTS AND SCIENCE,MELASIVAPURI
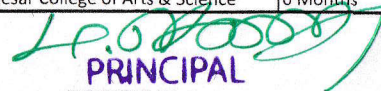
DEPARTMENT OF COMPUTER SCIENCE

STUDENTS UNDERTAKING PROJECT (Group Project) -APRIL 2021

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	CBS18S186047	A.MOHAMMED SHYED AFIL	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Text To Speech Conversion Technology For Blind People	Ganesar College of Arts & Science	6 Months
2	CBS18S186073	S.SURYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Text To Speech Conversion Technology For Blind People	Ganesar College of Arts & Science	6 Months
3	CBS18S186027	V.ARUNKUMAR	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Online Terminal Management System	Ganesar College of Arts & Science	6 Months
4	CBS18S186048	S.MUTHUKRISHNAN	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Online Terminal Management System	Ganesar College of Arts & Science	6 Months
5	CBS18S186065	M.SHOBANA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Privacy-Preserving Public Auditing For Data Storage Security	Ganesar College of Arts & Science	6 Months
6	CBS18S186069	R.SIVARANJANI	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Privacy-Preserving Public Auditing For Data Storage Security	Ganesar College of Arts & Science	6 Months
7	CBS18S186029	S,CHINNAMMAL	Mr R.RAJA	16SMBECSPW	PROJECTWORK	First Round	Ganesar College of Arts & Science	6 Months
8	CBS18S186075	C.VINITHA	Mr R.RAJA	16SMBECSPW	PROJECTWORK	First Round	Ganesar College of Arts & Science	6 Months
9	CBS18S186051	S.NIVETHA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Student And Staff Interaction Software	Ganesar College of Arts & Science	6 Months
10	CBS18S186059	K.PRIYANKA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Student And Staff Interaction Software	Ganesar College of Arts & Science	6 Months
11	CBS18S186020	V.AARTHI	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Geo Spatial Info Tech Solution	Ganesar College of Arts & Science	6 Months
12	CBS18S186068	A.SIVARANJANI	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Geo Spatial Info Tech Solution	Ganesar College of Arts & Science	6 Months
13	CBS18S186025	R.ANNALAKSHMI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Walk Around Concealed Buildings For Internal Floor Plan Structure	Ganesar College of Arts & Science	6 Months
14	CBS18S186046	M.MIRUDHULA	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Walk Around Concealed Buildings For Internal Floor Plan Structure	Ganesar College of Arts & Science	6 Months
15	CBS18S186050	R.NITHYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Taxation Information System	Ganesar College of Arts & Science	6 Months
16	CBS18S186072	M.SUGANYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Taxation Information System	Ganesar College of Arts & Science	6 Months
17	CBS18S186028	S.ASHA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Ensuring Distributed Accountability For Data Sharing In The Cloud	Ganesar College of Arts & Science	6 Months
18	CBS18S186045	G.MEENAL	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Ensuring Distributed Accountability For Data Sharing In The Cloud	Ganesar College of Arts & Science	6 Months
19	CBS18S186026	A.ARUNKUMAR	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Customer Relationship Management System Using Data Mining	Ganesar College of Arts & Science	6 Months
20	CBS18S186038	R.KARTHIKEYAN	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Customer Relationship Management System Using Data Mining	Ganesar College of Arts & Science	6 Months
21	CBS18S186052	R.PAVITHRA	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Smart City In Pudukkottai	Ganesar College of Arts & Science	6 Months
22	CBS18S186070	K.SRIDEVI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Smart City In Pudukkottai	Ganesar College of Arts & Science	6 Months
23	CBS18S186063	N.SARAVANAPERUMAL	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Client Server Based Live Meeting	Ganesar College of Arts & Science	6 Months
24	CBS18S186066	A.SIVA	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Client Server Based Live Meeting	Ganesar College of Arts & Science	6 Months
25	CBS18S186031	V.DINESH	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Online Car Auction Site	Ganesar College of Arts & Science	6 Months
26	CBS18S186036	S.KARTHIK	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Online Car Auction Site	Ganesar College of Arts & Science	6 Months
27	CBS18S186032	S.DIWANARIF	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Kurinji Gifts	Ganesar College of Arts & Science	6 Months
28	CBS18S186042	S.MAHESHKUMAR	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Kurinji Gifts	Ganesar College of Arts & Science	6 Months
29	CBS18S186023	C.ALAGUPERUMAL	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Secure Distributed Deduplication System With Improved Reliability	Ganesar College of Arts & Science	6 Months
30	CBS18S186035	V.KANNAPPAN	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Secure Distributed Deduplication System With Improved Reliability	Ganesar College of Arts & Science	6 Months
31	CBS18S186030	T.DHANYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Fruit Billing Software	Ganesar College of Arts & Science	6 Months
32	CBS18S186033	S.GOWSALYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Fruit Billing Software	Ganesar College of Arts & Science	6 Months
33	CBS18S186024	S.AMBIKA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Employee Tracker System	Ganesar College of Arts & Science	6 Months
34	CBS18S186040	S.LATHA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Employee Tracker System	Ganesar College of Arts & Science	6 Months
35	CBS18S186044	A.MEENAL	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Cafeteria For South India Foods	Ganesar College of Arts & Science	6 Months
36	CBS18S186057	A.PRAVEENA	Miss RM.VALLAIAMMAI	16SMBECSPW	PROJECTWORK	Cafeteria For South India Foods	Ganesar College of Arts & Science	6 Months
37	CBS18S186039	P.KEERTHIKA	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Techno Task Manager	Ganesar College of Arts & Science	6 Months
38	CBS18S186073	T.SUBBULAKSHMI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Techno Task Manager	Ganesar College of Arts & Science	6 Months
39	CBS18S186049	N.NANTHINI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Spiritual Tourism	Ganesar College of Arts & Science	6 Months
40	CBS18S186055	S.POTHUMANI	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Spiritual Tourism	Ganesar College of Arts & Science	6 Months
41	CBS18S186058	S.PRAVEENKUMAR	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Secure Data Sharing In Cloud Computing Using Revocable-Storage	Ganesar College of Arts & Science	6 Months
42	CBS18S186062	S.SAMUTHIRA PANDIYAN	Mr R.RAJA	16SMBECSPW	PROJECTWORK	Identity-Based Encryption	Ganesar College of Arts & Science	6 Months
43	CB18S186060	A.RAJALAKSHMI	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	online Bug Tracking And Customer Support System	Ganesar College of Arts & Science	6 Months
44	CB18S186061	A.RAMYA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	online Bug Tracking And Customer Support System	Ganesar College of Arts & Science	6 Months
45	CB18S186043	R.MADHUBALA	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Quick Witted Construction Plus	Ganesar College of Arts & Science	6 Months
46	CB18S186054	A.PONNALAGI	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	Quick Witted Construction Plus	Ganesar College of Arts & Science	6 Months
47	CB18S186041	P.LOGANATHAN	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	India Mapping Solution	Ganesar College of Arts & Science	6 Months
48	CB18S186056	K.PRADEEP	Miss PL.SUDHA	16SMBECSPW	PROJECTWORK	India Mapping Solution	Ganesar College of Arts & Science	6 Months

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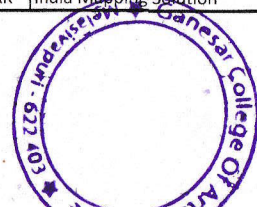
PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

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

R.PAVITHRA
Reg No: CB18S186052

&

K.SRIDEVI
Reg No: CB18S186070

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

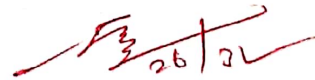Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "SMART CITY IN PUDUKKOTTAI" is a bonafide record done by R.PAVITHRA(Reg No: CB18S186052) & R.SRIDEVI(Reg No: CB18S186070) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.
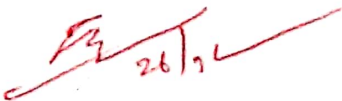
The Viva-voice examination was conducted on 26·03·2021 at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide
department

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

External Examiner

1.

2. 26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

GEO 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
V.AARTHI
Reg No: CB18S186020
&
A.SIVARANJANI
Reg No: CB18S186068

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2021

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

Department of Computer Science,

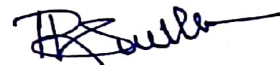Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "**GEO SPATIAL INFO-TECH SOLUTION**" is a bonafide record done by **V.AARTHI (Reg No: CB18S186020)** & **A.SIVARANJANI (Reg No: CB18S186068)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26/3/2021 at Ganesar College of Arts and science , Melaisivapuri.

Head of the department

Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, ~~~~~~~ uravathi
Pudukkottai

Signature of the Guide

External Examiner

1.

2.
        20/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

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

S.ASHA

Reg No: CB18S186028

&

G.MEENAL

Reg No: CB18S186045

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-2021

Miss RM.VALLIAMMAI M.Sc.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE
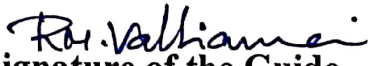
This is to certify that the project work entitled "ENSURING DISTRIBUTED ACCOUNTABILITY FOR DATA SHARING IN THE CLOUD" is a bonafide record done by S.ASHA **(Reg No: CB18S186028)** & **G.MEENAL(Reg No: CB18S186045)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on _26-3-2021_ at Ganesar College of Arts and science , Melaisivapuri.

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

Signature of the Guide

External Examiner

1.

2.

PRINCIPAL
Ganesar College Of Arts & Science
ME SIVAPURI - 622 403
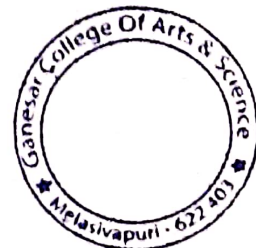
CLIENT SERVER BASED LIVE MEETING

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.SARAVANAPERUMAL

Reg No: CB18S186063

&

A.SIVA

Reg No: CB18S186066

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-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE
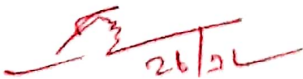
This is to certify that the project work entitled "CLIENT SERVER BASED LIVE MEETING" is a bonafide record done by N.SARAVANAPERUMAL (Reg No: CB18S186063) & A.SIVA (Reg No: CB18S186066) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26| 03 | 2021 at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

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

External Examiner

1. 26/3/2

2. 26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

CUSTOMER RELATIONSHIP MÀNAGEMENT SYSTEM USING DATA MINING

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

BACHELOR OF COMPUTER SCIENCE

By

A.ARUNKUMAR
Reg No: CB18S186026
&
R.KARTHIKEYAN
Reg No: CB18S186038

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

MELAISIVAPURI – 622 403
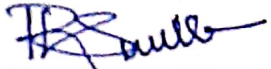
Tamil Nadu

APRIL-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "Customer Relationship Management System Using Data Mining" is a bonafide record done by **A.ARUNKUMAR (Reg No: CB18S186026 & R.KARTHIKEYAN (Reg No: CB18S186038)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26/03/2021 at Ganesar College of Arts and science , Melaisivapuri.

Head of the department

Signature of the Guide
Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 62240>

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

External Examiner

1.

2.   20/3/21

CAFETERIA FOR SOUTH INDIAN FOODS

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

A.MEENAL
Reg No: CB18S186044

&

A.PRAVEENA
Reg No: CB18S186057

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-2021

Miss RM.VALLIAMMAI M.Sc.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "CAFETERIA FOR SOUTH INDIAN FOODS" is a bonafide record done by A.MEENAL (Reg No: CB18S186044) & A.PRAVEENA (Reg No: CB18S186057) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on _26-3-2021_ at Ganesar College of Arts and science , Melaisivapuri.
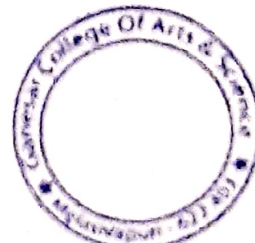
Signature of the Guide

Head of the department

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

External Examiner

1.

2. 26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

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

By

Submitted by

C.ALAGUPERUMAL
Reg No: CB18S186023

&

V.KANNAPPAN
Reg No: CB18S186035

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-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

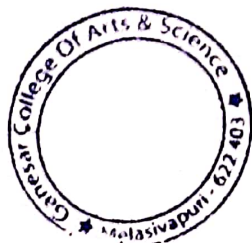This is to certify that the project work entitled "SECURE DISTRIBUTED DEDUPLICATIONS SYSTEM WITH IMPROVED RELIABILITY" is a bonafide record done by C.ALAGUPERUMAL (Reg No: CB18S186023) & V.KANNAPPAN (Reg No: CB18S186035) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

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

Signature of the Guide

Head of the department
Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 6224

External Examiner

1.

2.   26/5/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403
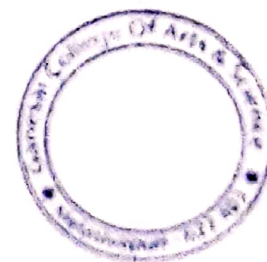
PRIVACY-PRESERVING PUBLIC AUDITING FOR DATA STORAGE SECURITY IN CLOUD COMPUTING

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
M.SHOBANA
Reg No: CB18S186065
&
R.SIVARANJANI
Reg No: CB18S186069

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2021

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 "PRIVACY-PRESERVING PUBLIC AUDITING FOR DATA STORAGE SECURITY IN CLOUD COMPUTING" is a bonafide record done by **M.SHOBANA (Reg No: CB18S186065) & R.SIVARANJANI (Reg No: CB18S186069)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on _26.03.2021_ at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

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

External Examiner

1.

2.

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

STUDENT AND STAFF INTERACTION SOFTWARE

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.NIVETHA
Reg No: CB18S186051
&
K.PRIYANKA
Reg No: CB18S186059

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
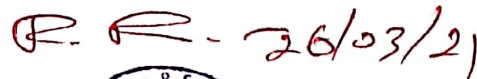
MELAISIVAPURI – 622 403
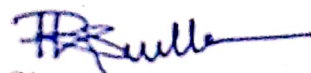
Tamil Nadu

APRIL-2021

Miss RM.VALLIAMMAI M.Sc.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasivapuri, Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "**STUDENT AND STAFF INTERACTION SOFTWARE** " is a bonafide record done by **S.NIVETHA (Reg No: CB18S186051) & K.PRIYANKA (Reg No: CB18S186059)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020–2021.

The Viva-voice examination was conducted on 26.3.2021 at Ganesar College of Arts and science , Melaisivapuri.

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.

2. 29/3/21

WALK AROUND CONCEALED BUILDINGS FOR INTERNAL FLOOR PLAN STRUCTURE

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

R.ANNALAKSHMI
Reg No: CB18S186025

&

M.MIRUDHULA
Reg No: CB18S186046

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-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "WALK AROUND CONCEALED BUILDINGS FOR INTERNAL FLOOR PLAN STRUCTURE" is a bonafide record done by **R.ANNALAKSHMI (Reg No: CB18S186025) & M.MIRUDHULA (Reg No: CB18S186046)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26·03·2021 at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

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

External Examiner

1. 26/3

2. 26/03/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

TAXATION INFORMATION 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

R.NITHYA
Reg No: CB18S186050
&
M.SUGANYA
Reg No: CB18S186072

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and science

Accredited by NAAC with "B"Grade
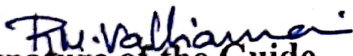
MELAISIVAPURI – 622 403

TamilNadu

APRIL-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "TAXATION INFORMATION SYSTEM" is a bonafide record done By **R.NITHYA** **(Reg No: CB18S186050)** & M.SUGANYA**(Reg No: CB18S186072)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26·3·2021 at Ganesar College of Arts and science , Melasivapuri.
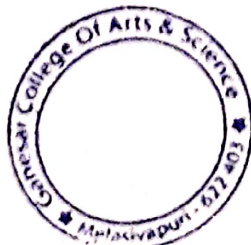
Signature of the Guide

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

External Examiner

1.

2. ER.—26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

STUDENT AND STAFF INTERACTION SOFTWARE

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.NIVETHA
Reg No: CB18S186051
&
K.PRIYANKA
Reg No: CB18S186059

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-2021

Miss RM.VALLIAMMAI M.Sc.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasivapuri, Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled **"STUDENT AND STAFF INTERACTION SOFTWARE "** is a bonafide record done by **S.NIVETHA (Reg No: CB18S186051) & K.PRIYANKA (Reg No: CB18S186059)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020–2021.

The Viva-voice examination was conducted on 26.3.2021 at Ganesar College of Arts and science , Melaisivapuri.

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.

2. 26/3/21

FIRST ROUND

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.CHINNAMMAL

Reg No: CB18S186029

&

C.VINITHA

Reg No: CB18S186075

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-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "**FIRST ROUND**" is a bonafide record done by **S.CHINNAMMAL (Reg No: CB18S186029)** & **C.VINITHA (Reg No: CB18S186075)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

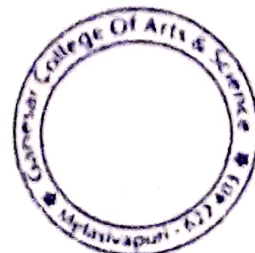The Viva-voice examination was conducted on _26.03.2021_ at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

Head of the department
Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622...

External Examiner

1.

2.   20/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

TEXT TO SPEECH CONVERSION TECHNOLOGY FOR BLIND PEOPLE

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

A.MOHAMMED SHYED AFIL
Reg No: CB18S186047

&

S.SURYA
Reg No: CB18S186073

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

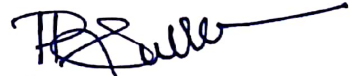Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "TEXT TO SPEECH CONVERSION TECHNOLOGY FOR BLIND PEOPLE " is a bonafide record done by A.MOHAMMED SHYED AFIL (Reg No: CB18S186047) & S.SURYA (Reg No: CB18S186073) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26/03/2021 at Ganesar College of Arts and science , Melaisivapuri.

Head of the department

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

External Examiner

1.

2.
26/03/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

ONLINE TERMINAL MANAGEMENT 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

V.ARUNKUMAR
Reg No: CB18S186027
&
S.MUTHUKRISHNAN
Reg No: CB18S186048

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-2021

Miss RM.VALLIAMMAI M.Sc.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled **"ONLINE TERMINAL MANAGEMENT SYSTEM "** is a bonafide record done by **V.ARUNKUMAR (Reg No: CB18S186027) & S.MUTHUKRISHNAN (Reg No: CB18S186048)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

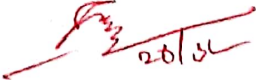The Viva-voice examination was conducted on 26.03.2021 at Ganesar College of Arts and science , Melaisivapuri.
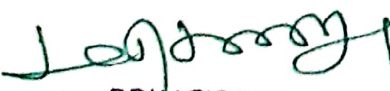
Signature of the Guide

Head of the department

Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622 ...

External Examiner

1.

2.   24/03/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

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
By
Submitted by

C.ALAGUPERUMAL
Reg No: CB18S186023
&
V.KANNAPPAN
Reg No: CB18S186035

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-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "SECURE DISTRIBUTED DEDUPLICATIONS SYSTEM WITH IMPROVED RELIABILITY" is a bonafide record done by C.ALAGUPERUMAL (Reg No: CB18S186023) & V.KANNAPPAN (Reg No: CB18S186035) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on __26/03/21__ at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

Head of the department

Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622

External Examiner

1.

2. 26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

TECHNO TASK MANAGER

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.KEERTHIKA

Reg No: CB18S186039

&

T.SUBBULAKSHMI

Reg No: CB18S186071

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-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "**TECHNO TASK MANAGER**" is a bonafide record done by **P.KEERTHIKA** (Reg No: CB18S186039) & T. SUBBULAKSHMI (Reg No: CB18S186071) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020- 2021.

The Viva-voice examination was conducted on 26-03-2021 at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

Head of the department

Head
Department of Computer Science
Ganesar College of Arts and Science
Melaisivapuri, Ponnamaravathi
Pudukkottai - 622..

External Examiner

1.

2. 26/03/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403
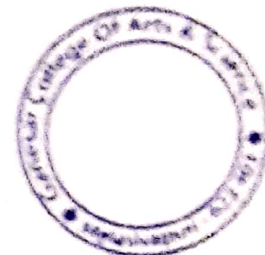
SPIRITUAL TOURISM

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.NANTHINI

Reg No: CB18S186049

&

S.POTHUMANI

Reg No: CB18S186055

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-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled ""SPIRITUAL TOURISM" is a bonafide record done by A.NANTHINI (Reg No: CB18S186049) & S.POTHUMANI (Reg No: CB18S186055) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26/03/2021 at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

Head of the department

Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622400

External Examiner

1. 21/3

2. 26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

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

S.AMBIKA
Reg No: CB18S186024
&
S.LATHA
Reg No: CB18S186040

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-2021

Miss RM.VALLIAMMAI M.Sc.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "**EMPLOYEE TRACKER SYSTEM**" is a bonafide record done by **S.AMBIKA (Reg No: CB18S186024)** & **S.LATHA (Reg No: CB18S186040)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26·03·21 at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

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

External Examiner

1.

2. R. R - 26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

Secure Data Sharing in Cloud Computing Using Revocable-Storage Identity-Based Encryption

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.PRAVEENKUMAR
Reg No: CB18S186058

&

S.SAMUTHIRA PANDIYAN
Reg No: CB18S186062

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
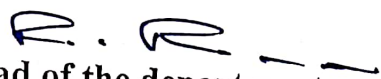
Tamil Nadu

APRIL-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "Secure Data Sharing in Cloud Computing Using Revocable-Storage Identity-Based Encryption" is a bonafide record done by S.PRAVEENKUMAR (Reg No: CB18S186058) & S.SAMUTHIRA PANDIYAN(Reg No: CB18S186062) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021

The Viva-voice examination was conducted on 26. 03. 2021 at Ganesar College of Arts and science , Melaisivapuri.
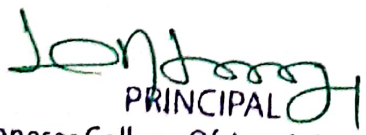
Signature of the Guide

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

External Examiner

1.

2. 20/05/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

FRUIT BILLING SOFTWARE

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

T.DHANYA
Reg No: CB18S186030

&

S.GOWSALYA
Reg No: CB18S186033

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2021

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 "FRUIT BILLING SOFTWARE " is a bonafide record done by T.DHANYA **(Reg No: CB18S186030)** & S.GOWSALYA **(Reg No: CB18S186033)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26.03.2021 at Ganesar College of Arts and science , Melaisivapuri.
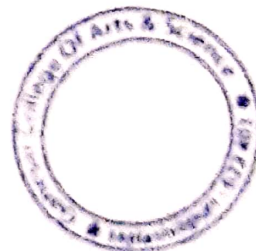
Head of the department
Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

Signature of the Guide

External Examiner

1.

2.

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403
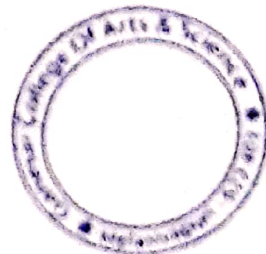
ONLINE CAR AUCTION SITE

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

V.DHINESH

Reg No: CB18S186031

&

S.KARTHICK

Reg No: CB18S186036

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-2021

Miss RM.VALLIAMMAI M.Sc.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasivapuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "ONLINE CAR AUCTION SITE " is a bonafide record done by **V.DHINESH (Reg No: CB18S186031) & S.KARTHIK (Reg No: CB18S186036)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26/03/2021 at Ganesar College of Arts and science , Melaisivapuri.

Signature of the Guide

Head of the department
Head
Department of Computer Science
Ganesar College of Arts and Science
Melasivapuri, Ponnamaravathi
Pudukkottai - 6224...

External Examiner

1.

2. 26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

KURINJI GIFTS

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.DIWANARIF

Reg No: CB18S186032

&

S.MAHESHKUMAR

Reg No: CB18S186042

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

MELASIVAPURI – 622 403

Tamil Nadu

APRIL-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasivapuri, Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "**KURINJI GIFTS**" is a bonafide record done by **S.DIWANARIF (Reg No: CB18S186032)** & **S.MAHESHKUMAR (Reg No: CB18S186042)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on _26-03-21_ 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 - 6224.

External Examiner

1.

2.   20/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

ONLINE BUG TRACKING AND CUSTOMER SUPPORT 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

A.RAJALAKSHMI
Reg No: CB18S186060

&

A.RAMYA
Reg No: CB18S186061

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

MELAISIVAPURI – 622 403
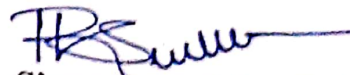
Tamil Nadu

APRIL-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled "ONLINE BUG TRACKING AND CUSTOMER SUPPORT SYSTEM" is a bonafide record done by A.RAJALAKSHMI (Reg No: CB18S186060) & A.RAMYA (Reg No: CB18S186061) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on ___26-03-21___ at Ganesar College of Arts and science , Melaisivapuri.

Head of the department

Department of Com...
Ganesar College of Arts and Scienc.
Melasivapuri, Ponnamaravathi
Pudukkottai - 622403

Signature of the Guide

External Examiner

1. ___ 20/3/21

2. ___ 26/3/21

PRINCIPAL

Ganesar College Of Arts & Scienc
MELASIVAPURI - 622 401

Quick Witted 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

R.MATHUBALA

Reg No: CB18S186043

&

A.PONNALAGI

Reg No: CB18S186054

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2021

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

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE
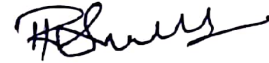
This is to certify that the project work entitled **"Quick Witted Construction Plus"** is a bonafide record done by R.MATHUBALA **(Reg No: CB18S186043)** & A.PONNALAGI **(Reg No: CB18S186054)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on _26-3-21_ at Ganesar College of Arts and science , Melaisivapuri.

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

Signature of the Guide

External Examiner

1. _____ 26/3

2. _____ 26/03/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

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.LOGANATHAN
Reg No: CB18S186041
&
K.PRADEEP
Reg No: CB18S186056

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2021
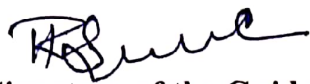
Miss.PL.SUDHA,M.Sc.,M.Phil.,

Department of Computer Science,

Ganesar College Of Arts And Science,

Melasipuri,Pudukkottai Dt.-622403.

CERTIFICATE

This is to certify that the project work entitled **"INDIA MAPPING SOLUTIONS"** is a bonafide record done by **P.LOGANATHAN (Reg No: CB18S186041) & K.PRADEEP(Reg No: CB18S186056)** in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on ____26 - 3 - 21____ at Ganesar College of Arts and science , Melaisivapuri.

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

Signature of the Guide

External Examiner

1. _____ 26/3

2. _____ 26/3/21

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

TEXT TO SPEECH CONVERSION TECHNOLOGY FOR BLIND PEOPLE

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

A.MOHAMMED SHYED AFIL
Reg No: CB18S186047

&

S.SURYA
Reg No: CB18S186073

Under the Guidance of

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

Department of Computer Science

Ganesar College of Arts and Science

Accredited by NAAC with "B" Grade

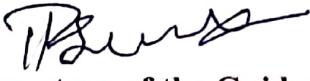MELAISIVAPURI – 622 403

Tamil Nadu

APRIL-2021

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 "TEXT TO SPEECH CONVERSION TECHNOLOGY FOR BLIND PEOPLE " is a bonafide record done by A.MOHAMMED SHYED AFIL (Reg No: CB18S186047) & S.SURYA (Reg No: CB18S186073) in partial fulfillment of the requirements for the award of the degree of Bachelor of Computer Science, during the academic year 2020– 2021.

The Viva-voice examination was conducted on 26/03/2021 at Ganesar College of Arts and science , Melaisivapuri.

Head of the department

Signature of the Guide

External Examiner

1.

2.

26/03/21

ACKNOWLEDGEMENT

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 thankful to our Principal **Dr.M.SELVARASU M.A., M.Phil.,B.Ed., Ph.D.,** for the all the assistance and encouragement rendered to me during my project work.

I express our profound thank to **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.

Further, I wish to express my sincere thanks to my internal guide of this project **Miss PL. SUDHA M.Sc., M.Phil.,** for her valuable support and guidance throughout the project.

I express my thanks and gratitude to my parents and all my friends who have helped me to complete this project successfully.

S.NO	CONTENTS	PAGES

ABSTRACT

TEXT TO SPEECH CONVERSION TECHNOLOGY FOR BLIND PEOPLE

ABSTRACT

Blindness makes life rather difficult for people who suffer from this health problem, but the use of technology can help in some day-to-day tasks. In this context, the present work focuses the development of a photo-to-speech application for the blind. The project is called Camera Reading for Blind People, and its ultimate purpose is the development of a mobile application that allows a blind user to "read" text (a sheet of paper, a signal, etc.). To achieve that, a set of frameworks of Optical Character Recognition (OCR) and Text to Speech Synthesis (TTS) are integrated, which enables the user, using a smartphone, to take a picture and hear the text that exists in the picture.

INTRODUCTION

1 . INTRODUCTION

Blind people are unable to perform visual tasks. For instance, text reading requires the use of a braille reading system or a digital speech synthesizer (if the text is available in digital format).The development of a mobile application that can perform the image to speech conversion, whether it's a text written on a wall, a sheet of writing paper or in another support, has a great potential and utility. The technology of optical character recognition (OCR) enables the recognition of texts from image data. This technology has been widely used in scanned or photographed documents, converting them into electronic copies, which one can edit, search, play its content and easily carry . The technology of speech synthesis (TTS) enables a text in digital format to be synthesized into human voice and played through an audio system. The objective of the TTS is the automatic conversion of sentences, without restrictions, into spoken discourse in a natural language, resembling the spoken form of the same text, by a native

OPTICAL CHARACTER RECOGNIZATION

2. OPTICAL CHARACTER RECOGNIZATION

Optical character recognition (OCR) is the electronic identification and digital encoding of typed or printed text by means of an optical scanner and specialized software. Using OCR software allows a computer to read static images of text and convert them into editable, searchable data. OCR typically involves three steps: opening and/or scanning a document in the OCR software, recognizing the document in the OCR software, and then saving the OCR-produced document in a format of your choosing.

OCR can be used for a variety of applications. In academic settings, it is oftentimes useful for text and/or data mining projects, as well as textual comparisons. OCR is also an important tool for creating accessible documents, especially PDFs, for blind and visually-impaired persons.

2.1 .TEXT TO SPEECH SYNTHESIS

Text-to-Speech (TTS):

Is the ability of a computer to produce spoken words by converting text to voice. In other words Text-to-Speech software is a speech synthesizer that vocalizes text in real time in a natural way. Text-to-Speech technology can be used in various areas:

Telecommunications:

Text to speech can be implemented in IVR systems to create an efficient self-service solution that improves customer satisfaction by informing and guiding callers while reducing costs. TTS can also be used in automated outbound call systems in order to provide information to customers without the need of an agent.

Mobile:

From navigators to mobile phones and from e-readers to tablets Text-to-Speech technology is used to vocalize contents in order to provide an easier and more natural interaction. It is also used in mobile applications for various development platforms.

Education:

Text-to-Speech technology can be used in language teaching applications to vocalize any word in order to improve the pronunciation capabilities of the users.

Accessibility:

Text to speech technology can read text out loud and enables the use of computers and mobile devices for the disabled and for people with special needs. For example menus of ATMs are vocalized with Text to Speech technology in order to provide enhanced customer experience especially for the disabled. Web site and newspaper vocalization can also be listed among accessibility-related use of TTS.

2.2. DATA MINING

Data mining refers to extracting or "mining" knowledge from large amounts of data stored either in databases, data warehouses, or other information repositories. Data mining has recently become an important area of research. The term is actually a misnomer. It is the non-trivial process of identifying valid, novel, potentially useful, and ultimately understandable patterns in data. It can be viewed as a result of the natural evolution of information technology. The database system has witnessed an evolutionary path in the development of the following functionalities. Data collection and database creation, data management, and advanced data analysis.

It has attracted a great deal of attention in the information industry and in society as a whole in recent years, due to the wide availability of huge amounts of data and the imminent need for turning such data into useful information. The reason for this recent interest in the data mining area arises from its applicability to a wide variety problems, including not only databases containing consumer and transaction information but also advanced data bases on multimedia, spatial and temporal information.

SYSTEM ANALYSIS

3. SYSTEM ANALYSIS

EXISTIN SYSTEM

In existing system OCR based scheme implemented for OCR based scheme has been implemented . In existing system there is no application software has been implemented in existing system.A specs inbuilt camera is used to capture the text image from the printed text and the captured image is analyzed using Tesseract-Optical Character recognition (OCR).

DISADVANTAGE:

- High error
- Continuous word and speech not recognized .

PROPOSED SYSTEMS

This proposed system Text to Speech using eSpeak eSpeak is a compact open source software speech synthesizer for English and other languages, for Linux and Windows which uses a "formant synthesis" method. This allows many languages to be provided in a small size.

The main advantage of using eSpeak is that the speech is clear, andcan be used at high speed.eSpeak is available as a command line program (Linux and Windows) to speak text from a file or from stdinand shared library version for use by other programs.

ADVANTAGE:

- Its very portable
- Hand held
- Easy to handle

SOFTWARE REQUIREMENTS

4. SOFTWARE REQUIRMENTS

Android studio 3.5:

Android Studio 3.5 Beta is prepared to download today. A year ago, at Google I/O, we got notification from a significant number of you that you needed us to concentrate much more on quality and strength over highlights. Like this, the complete recommendation is made for Project Marble, which primarily focuses on the fundamental rights and which in turn makes the IDE streams to be constant.

Android Studio 3.5 is the perfection of this exertion. The consequences of Project Marble are centered around three center regions: framework wellbeing, include clean and bugs.

One of the significant purposes of criticism on Android Studio is how moderate the IDE runs after some time. Commonly the explanation for this experience is becauseof out of the blue arriving at memory weight or IDE memory spills.

In addition to it, a higher percentage of memory outage was recorded with the project when dealing with the Application on a large scale. For recognizing such memory leaks, the complete measurement of the "out-of-memory" exception isbeing recorded, showing the regulatory information about the people who are selected for conferring the data.

This usually enables users or developers to share and focus on the most moral issues.When we start with Android Studio 3.5, the IDE normally misplaces the memory statistics. As a result, we get the high-level estimation for the memory size and itsrelated burden on the Application.With this data, the IDE can finish two things: prescribe better memory settings andoffer to do an increasingly significant memory assessment.

Firebase:

In the era of rapid prototyping, we can get bright ideas, but sometimes they are not applicable if they take too much work. Often, the back-end is the limiting factor - many considerations never apply to server-side coding due to lack of knowledge or time.

Firebase is a Backend-as-a-Service(BaaS) which started as a YC11 startup. It grew up into a next-generation app-development platform on Google Cloud Platform. Firebase (a NoSQLjSON database) is a real-time database that allows storing a list of objects in the form of a tree. We can synchronize data between different devices.

SYSTEM ARCHITECTURE
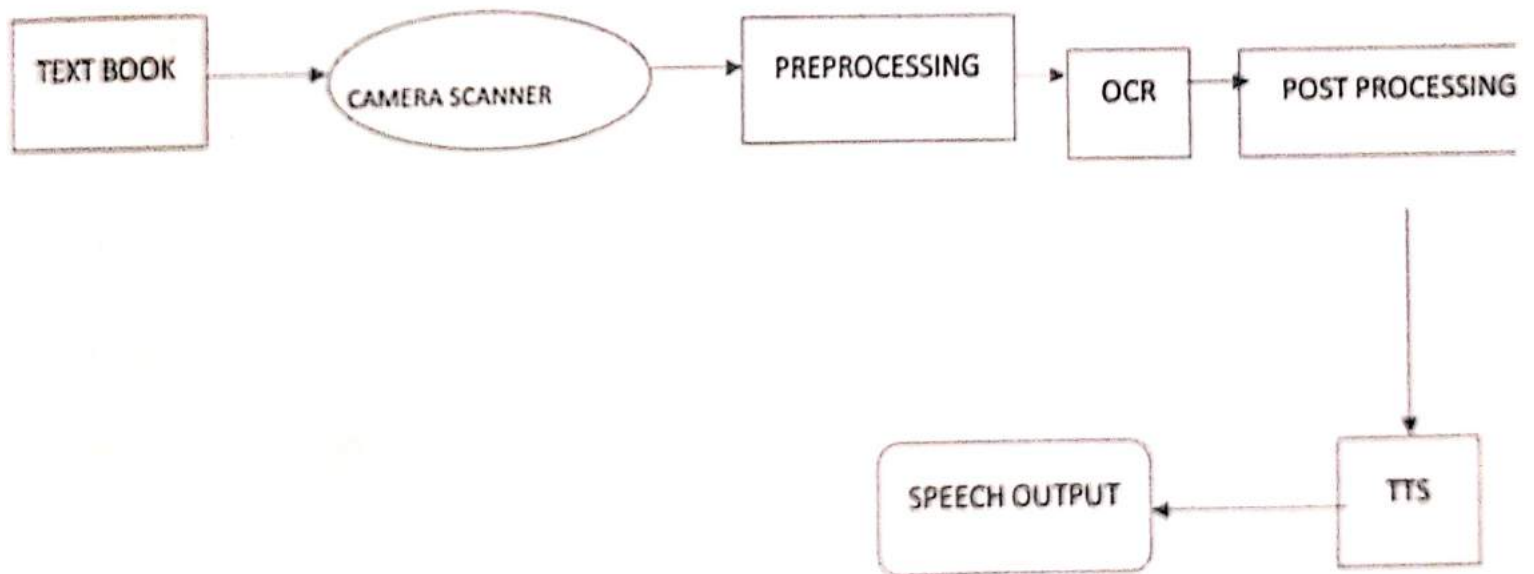
Camera scanner

Scanning image text using mobile camera for Text to speech conversion process.

OCR-Optical character reorganization

The extraction of the text in the image is done using optical character recognition (OCR). OCR is a field of research in pattern recognition, artificial intelligence and computer vision. It is the conversion of the images of typed, handwritten or printed text into a digital text or computer format text. Earlier OCR versions had to be trained in each character of a text with its specific font.

Today advanced OCRs are available that have a high degree of accuracy support a wide variety of image formats, languages and fonts. For our project, we have used Tesseract OCR. It is the most accurate open source OCR engine and is powered by google. It can be used on t he Linux, mac and windows platform. The newest Tesseract version, 3.4 supports a hundred languages. However images must undergo a number of pre-processing stages like noise removal, scaling etc. otherwise the output will be of low quality.

TTS- Text to speech synthesis

The process of converting text to speech by a computer is called speech synthesis. A text to speech system (TTS) is used to perform speech synthesis. A TTS is composed of two parts: front end and back end. The front end converts the text to a symbol, for example, a number. Each symbol generated is assigned a phonetic. The back end then converts the phonetic into sound. In our project, we have used Festival TTS. Festival is the most widely used open source TTS. It has a wide variety of voices and support English, Spanish and welsh language. We have used the English language.

MODULE

DESCRIPTION

5. MODULE DESCRIPTION

COMMAND AT TOUCH SCREEN:

Android enabled devices would function like normal except with touch screen commands, endless Apps, and USB, Ethernet, or Wi-Fi connectivity. On the microwave, for instance, a user may want to download recipes, look up nutritional information, or just listen to Pandora while they cook. If successful, products like these may be a sign that every object in our lives is on the path to becoming a droid.

AUTO FOCUS AND TAKE PICTURE:

It's always annoying when you think you've taken a good image on location and then go home to find your subject is slightly blurry. Here's howto make sure your photos are always in focus.

SEND PICTURE AND GET RESULTS:

To change the text-to-speech settings, head to **Settings > Personal > Language and input > Speech > Text-to-speech output.**Android's text-to-speech feature automatically works with other Google apps that offer a read aloud feature. For all other apps, you'll need to enable **Select-to-speak** in Android's settings menu.To enable the feature, go to **Settings > System > Accessibility > Services > Select-to-speak**. To use it, select text in any app and choose **Speak** from the popup menu.

OCR RESULTS AND VOICE OUTPUT:

Optical character recognition or optical character reader (OCR) is the electronic or mechanical conversion of images of typed, handwritten or printed text into machine-encoded text, whether from a scanned document, a photo of a document, a scene-photo (for example the text on signs and billboards in a landscape photo) or from subtitle text superimposed on an image (for example from a television broadcast and finally gives voice output.

CONCLUSION

6. CONCLUSION

This is an economical as well as efficient device for the visually impaired people. We have applied our algorithm on many images and found that it successfully does its conversion. The device is compact and helpful to the society. These methods are applied to the summarization of unrestricted-domain spontaneous presentations and evaluated by objective and subjective measures. It was confirmed that proposed methods are effective in speech summarization.

SOURCE CODE

7. SOURCE CODE

CAPTURING IMAGE TEXT

```java
import android.annotation.SuppressLint;
import android.app.Activity;
import android.app.AlertDialog;
import android.app.Dialog;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.content.IntentFilter;
import android.content.pm.PackageManager;
import android.hardware.Camera;
import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.support.annotation.NonNull;
import android.support.design.widget.Snackbar;
import android.support.v4.app.ActivityCompat;
import android.support.v7.app.AppCompatActivity;
import android.util.Log;
import android.view.GestureDetector;
import android.view.MotionEvent;
import android.view.ScaleGestureDetector;
import android.view.View;
import android.widget.Toast;
```

```java
import com.google.android.gms.common.ConnectionResult;
import com.google.android.gms.common.GoogleApiAvailability;
import
com.google.android.gms.samples.vision.ocrreader.ui.camera.Came
raSource
;
import com.google.android.gms.samples.vision.ocrreader.ui.camera.CameraSource
Preview;
import    com.google.android.gms.samples.vision.ocrreader.ui.camera.GraphicOverla
y;
import com.google.android.gms.vision.text.TextBlock;
import com.google.android.gms.vision.text.TextRecognizer;


import java.io.IOException;
import java.util.Locale;


/**
 * Activity for the Ocr Detecting app.  This app detects text and displays the value
with the
 * rear facing camera. During detection overlay graphics are drawn to indicate the
position
public final class OcrCaptureActivity extends AppCompatActivity {
    private static final String TAG = "OcrCaptureActivity";


    // Intent request code to handle updating play services if needed.
    private static final int RC_HANDLE_GMS = 9001;
```

```java
// Permission request codes need to be < 256
private static final int RC_HANDLE_CAMERA_PERM = 2;


// Constants used to pass extra data in the intent

public static final String AutoFocus = "AutoFocus";
public static final String UseFlash = "UseFlash";
public static final String TextBlockObject = "String";


private CameraSource cameraSource;
private CameraSourcePreview preview;
private GraphicOverlay<OcrGraphic> graphicOverlay;


// Helper objects for detecting taps and pinches.
private ScaleGestureDetector scaleGestureDetector;
private GestureDetector gestureDetector;


// A TextToSpeech engine for speaking a String value.
private TextToSpeech tts;


/**
 * Initializes the UI and creates the detector pipeline.
 */
@Override
public void onCreate(Bundle bundle) {
    super.onCreate(bundle);
    setContentView(R.layout.ocr_capture);
```

```java
preview = (CameraSourcePreview) findViewById(R.id.preview);
graphicOverlay = (GraphicOverlay<OcrGraphic>) findViewById(R.id.graphi
cOverlay);
    // Set good defaults for capturing text.
    boolean autoFocus = true;
    boolean useFlash = false;


    // Check for the camera permission before accessing the camera.  If the
    // permission is not granted yet, request permission.
    int rc = ActivityCompat.checkSelfPermission(this, Manifest.permission.CAM
ERA);
    if (rc == PackageManager.PERMISSION_GRANTED) {
        createCameraSource(autoFocus, useFlash);
    } else {
        requestCameraPermission();
    }


    gestureDetector = new GestureDetector(this, new CaptureGestureListener());
    scaleGestureDetector = new ScaleGestureDetector(this, new ScaleListener());


    Snackbar.make(graphicOverlay, "Tap to Speak. Pinch/Stretch to zoom",
        Snackbar.LENGTH_LONG)
        .show();
```

```java
// Set up the Text To Speech engine.
TextToSpeech.OnInitListener listener =
    new TextToSpeech.OnInitListener() {
        @Override
        public void onInit(final int status) {
            if (status == TextToSpeech.SUCCESS) {


/**
 * Handles the requesting of the camera permission.  This includes
 * showing a "Snackbar" message of why the permission is needed then
 * sending the request.
 */
private void requestCameraPermission() {
    Log.w(TAG, "Camera permission is not granted. Requesting permission");

    final String[] permissions = new String[]{Manifest.permission.CAMERA};

    if (!ActivityCompat.shouldShowRequestPermissionRationale(this,
            Manifest.permission.CAMERA)) {
        ActivityCompat.requestPermissions(this, permissions, RC_HANDLE_CA
MERA_PERM);
        return;
```

```java
    }

    final Activity thisActivity = this;

    View.OnClickListener listener = new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            ActivityCompat.requestPermissions(thisActivity, permissions,
                RC_HANDLE_CAMERA_PERM);
        }
    };

    Snackbar.make(graphicOverlay, R.string.permission_camera_rationale,
            Snackbar.LENGTH_INDEFINITE)
            .setAction(R.string.ok, listener)
            .show();
}

@Override
public boolean onTouchEvent(MotionEvent e) {
    boolean b = scaleGestureDetector.onTouchEvent(e);

    boolean c = gestureDetector.onTouchEvent(e);

    return b || c || super.onTouchEvent(e);
}
```

```java
@SuppressLint("InlinedApi")
    private void createCameraSource(boolean autoFocus, boolean useFlash) {
        Context context = getApplicationContext();

        TextRecognizer textRecognizer = new TextRecognizer.Builder(context).build();
        textRecognizer.setProcessor(new OcrDetectorProcessor(graphicOverlay));

        if (!textRecognizer.isOperational()) {

            IntentFilter lowstorageFilter = new IntentFilter(Intent.ACTION_DEVICE_STORAGE_LOW);
            boolean hasLowStorage = registerReceiver(null, lowstorageFilter) != null;

            if (hasLowStorage) {
                Toast.makeText(this, R.string.low_storage_error, Toast.LENGTH_LONG).show();
                Log.w(TAG, getString(R.string.low_storage_error));
            }
        }
```

```java
cameraSource = preview = (CameraSourcePreview)
findViewById(R.id.preview); graphicOverlay =
(GraphicOverlay<OcrGraphic>) findViewById(R.id.graphi
cOverlay);
    // Set good defaults for capturing text.
    boolean autoFocus = true;
    boolean useFlash = false;


    // Check for the camera permission before accessing the camera.  If the
    // permission is not granted yet, request permission.
    int rc = ActivityCompat.checkSelfPermission(this, Manifest.permission.CAM
ERA);
    if (rc == PackageManager.PERMISSION_GRANTED) {
        createCameraSource(autoFocus, useFlash);
    } else {
        requestCameraPermission();
    }


    gestureDetector = new GestureDetector(this, new CaptureGestureListener());
    scaleGestureDetector = new ScaleGestureDetector(this, new ScaleListener());


    Snackbar.make(graphicOverlay, "Tap to Speak. Pinch/Stretch to zoom",
        Snackbar.LENGTH_LONG)
```

```java
        new CameraSource.Builder(getApplicationContext(), textRecognizer)
        .setFacing(CameraSource.CAMERA_FACING_BACK)
        .setRequestedPreviewSize(1280, 1024)
        .setRequestedFps(2.0f)
        .setFlashMode(useFlash ? Camera.Parameters.FLASH_MODE_TORCH
: null)
        .setFocusMode(autoFocus ? Camera.Parameters.FOCUS_MODE_CONT
INUOUS_VIDEO : null)
        .build();
}


/**
 * Restarts the camera.
 */
@Override
protected void onResume() {
    super.onResume();
    startCameraSource();
}


/**
 * Stops the camera.
 */
@Override
protected void onPause() {
    super.onPause();
    if (preview != null) {
```

```java
      preview.stop();
    }
  }


  /**
   * Releases the resources associated with the camera source, the associated detec
tors, and the
   * rest of the processing pipeline.
   */
  @Override
  protected void onDestroy() {
    super.onDestroy();
    if (preview != null) {
      preview.release();
    }
  }


  @Override
  public void onRequestPermissionsResult(int requestCode,
                          @NonNull String[] permissions,
                          @NonNull int[] grantResults) {
    if (requestCode != RC_HANDLE_CAMERA_PERM) {
      Log.d(TAG, "Got unexpected permission result: " + requestCode);
      super.onRequestPermissionsResult(requestCode, permissions, grantResults
);

      return;
    }
```

```java
if (grantResults.length != 0 && grantResults[0] == PackageManager.PERMI
SSION_GRANTED) {
    Log.d(TAG, "Camera permission granted - initialize the camera source");
    // we have permission, so create the camerasource
    boolean autoFocus = getIntent().getBooleanExtra(AutoFocus,true);
    boolean useFlash = getIntent().getBooleanExtra(UseFlash, false);
    createCameraSource(autoFocus, useFlash);
    return;
}

Log.e(TAG, "Permission not granted: results len = " + grantResults.length +
    " Result code = " + (grantResults.length > 0 ? grantResults[0] : "(empty)"
));

DialogInterface.OnClickListener listener = new DialogInterface.OnClickListe
ner() {
    public void onClick(DialogInterface dialog, int id) {
        finish();
    }
};

AlertDialog.Builder builder = new AlertDialog.Builder(this);
builder.setTitle("Multitracker sample")
    .setMessage(R.string.no_camera_permission)
    .setPositiveButton(R.string.ok, listener)
    .show();
```

```java
}


/**
 * Starts or restarts the camera source, if it exists. If the camera source doesn't e
xist yet
 * (e.g., because onResume was called before the camera source was created), th
is will be called
 * again when the camera source is created.
 */
private void startCameraSource() throws SecurityException {
    // check that the device has play services available.
    int code = GoogleApiAvailability.getInstance().isGooglePlayServicesAvailabl
e(
            getApplicationContext());
    if (code != ConnectionResult.SUCCESS) {
        Dialog dlg =
                GoogleApiAvailability.getInstance().getErrorDialog(this, code, RC_H
ANDLE_GMS);
        dlg.show();
    }


    if (cameraSource != null) {
        try {
            preview.start(cameraSource, graphicOverlay);
        } catch (IOException e) {
            Log.e(TAG, "Unable to start camera source.", e);
            cameraSource.release();
```

```java
            cameraSource = null;
        }
    }
}


    private boolean onTap(float rawX, float rawY) {
        OcrGraphic graphic = graphicOverlay.getGraphicAtLocation(rawX, rawY);
        TextBlock text = null;
        if (graphic != null) {
            text = graphic.getTextBlock();
            if (text != null && text.getValue() != null) {
                Log.d(TAG, "text data is being spoken! " + text.getValue());
                // Speak the string.
                tts.speak(text.getValue(), TextToSpeech.QUEUE_ADD, null, "DEFAUL
T");

            }
            else {
                Log.d(TAG, "text data is null");
            }
        }
        else {
            Log.d(TAG,"no text detected");
        }
        return text != null;
    }
```

```java
private class CaptureGestureListener extends GestureDetector.SimpleOnGesture
Listener {

    @Override
    public boolean onSingleTapConfirmed(MotionEvent e) {
        return onTap(e.getRawX(), e.getRawY()) || super.onSingleTapConfirmed(e
);
    }
}


private class ScaleListener implements ScaleGestureDetector.OnScaleGestureLi
stener {
    @Override
    public boolean onScale(ScaleGestureDetector detector) {
        return false;
    }



    @Override
    public boolean onScaleBegin(ScaleGestureDetector detector) {
        return true;
    }



    @Override
    public void onScaleEnd(ScaleGestureDetector detector) {
        if (cameraSource != null) {
        cameraSource.doZoom(detector.getScaleFactor());
    }
```

30

```
}


}
Activity.xml

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.google.android.gms.samples.vision.ocrreader"
    android:installLocation="auto" >

    <uses-feature android:name="android.hardware.camera" />

    <uses-permission android:name="android.permission.CAMERA" />

    <application
        android:allowBackup="true"
        android:fullBackupContent="false"
        android:hardwareAccelerated="true"
        android:icon="@drawable/icon"
        android:label="MultiTrackerApp"
        android:supportsRtl = "true"
        android:theme="@style/Theme.AppCompat" >
        <meta-data
            android:name="com.google.android.gms.vision.DEPENDENCIES"
            android:value="ocr" />

        <activity
            android:name="com.google.android.gms.samples.vision.ocrreader.MainAct
ivity"
            android:label="@string/title_activity_main" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
```

```xml
            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>

<activity android:name="com.google.android.gms.samples.vision.ocrreader.O

crCaptureActivity"
        android:label="Read Text" />
</application>
'manifest>
```

APPENDIX

8. APPENDIX

SCREEN SHOTS

Opening application screen

Capturing text using camera(OCR Technology)

ImageScannerActivity

Project Evaluation and Project Plan

- The job responsibility of a project manager ranges from invisible activities like buil up team morale to highly visible customer presentations.
- Most managers take responsibility for project proposal writing, project cost estimat scheduling, project staffing, software process tailoring, project monitoring and con software configuration management, risk management, interfacing with clie managerial report writing and presentations, etc.
- These activities are certainly numerous, varied and difficult to enumerate, but th activities can be broadly classified into project planning, and project monitoring control activities.
- The project planning activity is undertaken before the development starts to plan activities to be undertaken during development.
- The project monitoring and control activities are undertaken once the developm activities start with the aim of ensuring that the development proceeds as per plan a changing the plan whenever required to cope up with the situation.

1.2 Project Portfolio Management

1.2.1 Introduction

When there are many projects run by an organization, it is vital for the organization manage their project portfolio. This helps the organization to categorize the projects and ali the projects with their organizational goals.

Project Portfolio Management (PPM) is a management process with the help methods aimed at helping the organization to acquire information and sort out proje according to a set of criteria.

1.2.2 Objectives of Project Portfolio Management

Same as with financial portfolio management, the project portfolio management ai has its own set of objectives. These objectives are designed to bring about expected resul through coherent team players.

When it comes to the objectives, the following factors need to be outlined.

The need to create a descriptive document, which contains vital information such

Project Evaluation and Project Planning
The job responsibility of a project
manager ranges from invisible activities

Voice output

Project Evaluation and Project Plann

- The job responsibility of a project manager ranges from invisible activities like buildi up team morale to highly visible customer presentations.

- Most managers take responsibility for project proposal writing, project cost estimati scheduling, project staffing, software process tailoring, project monitoring and contr software configuration management, risk management, interfacing with clien managerial report writing and presentations, etc.

- These activities are certainly numerous, varied and difficult to enumerate, but the activities can be broadly classified into project planning and project monitoring a control activities.

- The project planning activity is undertaken before the development starts to plan th activities to be undertaken during development.

- The project monitoring and control activities are undertaken once the development activities start with the aim of ensuring that the development proceeds as per plan an changing the plan whenever required to cope-up with the situation.

1.2 Project Portfolio Management

1.2.1 Introduction

When there a

F
5
5

BIBLIOGRAPHY

9. BIBLOGRAPHY

1. [AlexandreTrilla and Francesc Alías. (2013), "SentenceBased Sentiment Analysis for Expressive Text-to-Speech", IEEE Transactions on Audio, Speech, and Language Processing, Vol. 21, Issue. 2. pp. 223-233

2. Alías F. Sevillano X. Socoró J. C Gonzalvo X. (2008), „Towards high-quality next-generation text-to-speech synthesi☐, IEEE Trans. Audio, Speech, Language Process, Vol. 16, No. 7. pp. 1340-1354

3. Alías F. Sevillano X. Socoró J. C Gonzalvo X. (2008), „Towards high-quality next-generation text-to-speech synthesi☐, IEEE Trans. Audio, Speech, Language Process, Vol. 16, No. 7. pp. 1340-1354

4. Nagaraja L, Nagarjun R S, Nishanth M Anand "Vision based Text Recognition using Raspberry Pi" National Conference on Power Systems &Industrial Automation (NCPSIA) 2015

GANESAR COLLGE OF ARTS AND SCIENCE, MELAISIVAPURI

DEPARTMENT OF ENGLISH -2020-2021 PROJECT LIST

S.NO	REG.NO	STUDENTS NAME	PROJECT TOPICS	GUIDE NAME
1	P19050501	K.ARCHANA	PREDICAMENT OF WOMEN IN SHASHI DESHPANDE'S ROOTS AND SHADOWS	Mr.S.KULANDHAIVEL
2	P19050502	A.ESWARI	A POSTCOLONIAL DISCOURSE IN R.K.NARAYANAN'S THE ENGLISH	Mrs..J.JAYARASI
3	P19050503	R.MALAR	CITY VERSUS VILLAGE IN ANITA DESAI'S THE VILLAGE BY THE SAE	Ms.S.VENNILA
4	P19050504	A.MANONMANI	ROLE OF COFFEE ESTATE WORKERS PORTRAYAL IN RAJA RAO'S KANTHAPURA	Mrs.S.SURYA
5	P19050505	M.SANTHIYA	EXPLORING THE BOND BETWEEN MAN AND NATURE IN AMITAV GHOSH'S THE HUNGRY TIDE	Mrs.G.SARASWATHY

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

PRINCIPAL
Ganesar College Of Arts & Science
MELASIVAPURI - 622 403

Prof. **J. JAYARASI, M.A., M. Phil., B.Ed.,**

Assistant professor of English,

Ganesar College of Arts and Science,

Melasivapuri-622 403.

CERTIFICATE

This is to certify that the dissertation entitled **A POSTCOLONIAL DISCOURE IN RAJA RAO'S 'THE ENGLISH TEACHER '** Submitted by **A. ESWARI (Reg. No: P 19050502)** 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 dissertation or any part of it has not been submitted elsewhere for any other degree.

Date: 25/03/2021

Place: Melasivapuri

Signature of the HOD   **Signature of the Guide**

Signature of the principal

PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI - 622 403

DEPARTMENT
J.J. College of Arts and Science,
PUDUKKOTTAI - 622 422

GANESAR COLLGE OF ARTS AND SCIENCE

MELASIVAPURI-622 403

Prof. S. VENNILA, M.A., M. Phil., B.Ed.

Assistant professor of English,

Ganesar College of Arts and Science,

Melasivapuri-622 403.
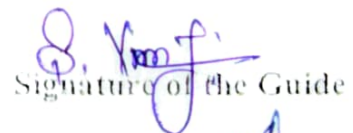
CERTIFICATE

This is to certify that the dissertation entitled **CITY VERSUS VILLAGE IN ANITA DESAI'S 'THE VILLAGE BY THE SEA'** Submitted by **R. MALAR (Reg. No: P 19050503)** Department of English, Ganesar College of Arts and Science, Melasivapuri, is a bonafied 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 dissertation or any part of it has not been submitted elsewhere for any other degree.

Date: 25/3/21

Place: Melasivapuri

Signature of the HOD

Signature of the Guide

Signature of the Principal
PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI - 622 403

DEPARTMENT OF ENGLISH
J.J. College of Arts and Science
PUDUKKOTTAI - 622 422

Ganesar College of Arts and Science
Dt:
Melasivapuri-622 403

GANESAR COLLEGE OF ARTS AND SCIENCE

MELAISIVAPURI-622403

Prof. S. **SURYA**, M.A., M. Phil.,

Assistant professor of English,

Ganesar College of Arts and Science,
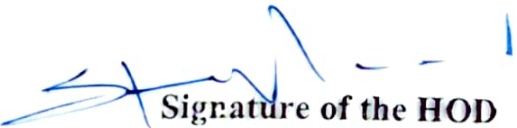
Melasivapuri-622 403.
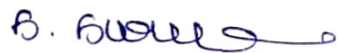
CERTIFICATE

This is to certify that the dissertation entitled **ROLE OF COFFEE ESTATE WORKERS PORTRAYED IN RAJA RAO' S 'KANTHAPURA'** Submitted by A. **MANONMANI (Reg. No: P 19050504)** Department of English, Ganesar College of Arts and Science, Melasivapuri, is a bonafied 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 dissertation or any part of it has not been submitted elsewhere for any other degree.

Date: 25/03/2021

Place: Melasivapuri

Signature of the HOD

Signature of the Guide

Signature of the Principal

PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI-622 403

DEPARTMENT OF ENGL
J.J. College of Arts and Science (Aut
PUDUKKOTTAI-622 4

Prof. **G. SARASWATHY, M.A., M. Phil., B.Ed.,**

Assistant professor of English,

Ganesar College of Arts and Science,

Melasivapuri-622 403.
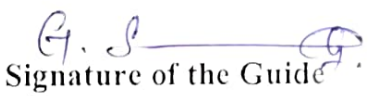
CERTIFICATE

This is to certify that the dissertation entitled **EXPLORING THE BOND BETWEEN MAN AND NATURE IN AMITAV GHOSH'S 'THE HUNGRY TIDE'** Submitted by **M. SANTHIYA (Reg. No: P 19050505)** 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 dissertation or any part of it has not been submitted elsewhere for any other degree.

Date: 25|3|21

Place: Melasivapuri

Signature of the HOD

Signature of the Guide

Signature of the principal
PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI - 622 403

DEPARTMENT OF ENGLISH
J.J. College of Arts and Science
PUDUKKOTTAI - 622 422

College of Arts and Science
Dt:
Melaisivapuri-622 403

A POSTCOLONIAL DISCOURSE IN R. K. NARAYAN'S

'THE ENGLISH TEACHER'

Project Report submitted to **BHARATHIDASAN UNIVERSITY,**

THIRUCHIRAPALLI.

In partial fulfillment of the requirement for the degree of

MASTER OF ARTS

in English

2020-2021

Researcher

A.ESWARI

(Reg. No: P 19050502)

Under the guidance of

Prof. **J. JAYARASI, M.A., M. Phil., B.Ed.,**

DEPARTMENT OF ENGLISH

GANESAR COLLEGE OF ARTS AND SCIENCE

MELASIVAPURI-622403

APRIL-2021

GANESAR COLLEGE OF ARTS AND SCIENCE

MELASIVAPURI-622 403

Prof. **J. JAYARASI, M.A.,** M. Phil., **B.Ed.,**

Assistant professor of English,

Ganesar College of Arts and Science.

Melasivapuri-622 403.

CERTIFICATE

This is to certify that the dissertation entitled **A POSTCOLONIAL DISCOURE IN RAJA RAO'S 'THE ENGLISH** TEACHER ' Submitted by **A. ESWARI (Reg. No: P 19050502)** 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 dissertation or any part of it has not been submitted elsewhere for any other degree.

Date: 25/03/2021

Place: Melasivapuri

Signature of the HOD

Signature of the Guide

Signature of the principal

PRINCIPAL
Ganesar College of Arts & Science
MELASIVAPURI - 622 403

27/03/2021

DEPARTMENT
J.J. College of Arts and Science;
PUDUKKOTTAI - 622 422

A.ESWARI

Reg. No: P 19050502

Ganesar College of Arts and Science

Melasivapuri-622 403

Pudukkottai District, Tamil Nadu.

DECLARATION

I hereby declare that the dissertation entitled **A POSTCOLONIAL DISCOURSE IN RAJA RAO'S 'THE ENGLISH TEACHER'** Submitted for the **M.A** Degree is an original work done by **A. ESWARI (Reg. No: P 19050502)** under the guidance of Prof. **J. JAYARASI, M.A., M. Phil., B.Ed., (Assistant professor of English)** and the dissertation has not formed the basis for the award of any degree or any other similar titles.

Place: Melasivapuri

Signature of the Candidate

Date: 25/03/2021

(A. ESWARI)

Signature of the Guide

ACKNOWLEDGEMENT

I thank Bharathidasan University for offering me the opportunity to study **M.A** English. I also thank the management for permitting me to purse my master degree in this esteemed institution.

My sincere thanks to **Dr. M. SELVARASU, M.A., M. Phil.,B.Ed., Ph.D.,** The Principal, Ganesar College of Arts and Science, Melasivapuri, for his guidance and encouragement to me during my course of study.

I thank most sincerely **Prof. S. KULANDHAIVEL, M.A., M. Phil., Ph.D.,** Head of the Department of English. Ganesar College of Arts and Science, Melasivapuri, for his constant encouragement and valuable guidance which helped me in a great way for completing my Project successfully.

I express my deep gratitude and sincere thanks to my guide **Prof. J. JAYARASI, M.A., M. Phil., B.Ed.,** Assistant professor, Ganesar College of Arts and Science, Melasivapuri, for her good guidance and encouragement for the successful completion of this Project work.

I extend my thanks to all the **Professors** of the department of English, Ganesar College of Arts and Science, Melasivapuri, for their support and encouragement.

I am very grateful to my parents, brothers and my friends who helped me to finish this dissertation successfully.

A.ESWARI

TEXTUAL NOTE

Reference details have been given within parenthesis as per the rules found in the latest MLA Hand Book.

The following abbreviations have been used in the text for the quotations taken from the primary sources.

THE ENGLISH TEACHER   - ET

CONTENTS

CHAPTER I

INTRODUCTION

Literature is a group works of art made up of word. Most are written, but some are passed on by word of mouth. Literature usually means work of poetry and prose that are especially well written. The word literature comes from the Latin **"learning, writing, grammar"**. Literature is a form of human expression. But not everything expressed in words-even when organized and written down-is counted as literature. Those writings that are primarily informative, technical, scholarly, journalistic would be excluded from the rank of literature by most, though not all, critics. Literature can be classified according to whether it is fiction or non-fiction and whether it is poetry or prose. It can be further distinguished according to major forms such as the novel, short story or drama, and works are often categorized according to historical periods or their adherence to certain aesthetic features or expectations.

Indian English Literature is two hundred years old, Sri Aurobindo Stands like a huge oak spreading its branches over these two centuries. He is the first poet in Indian writing in English. He has given the pre-independence of myths. Indian literature is generally believed to be the oldest in the world. It with vast cultural is officially recognized language in India. It is interesting to note that the Hindu literary traditions have dominated a large part of Indian culture. It is to be noted that a large part of Indian literature revolves around devotion, drama, poetry and songs.

1

The seed of Indian Writing in English was sown during the period of the British rule in India. Now the seed has blossomed into an evergreen tree, fragrant flowers and ripe fruits. The fruits are being tasted not only by the native people, but they are also being 'chewed and digested' by the foreigners. It happened only after the constant caring, pruning and feeding.

Sanskrit Language dominated the early Indian literary scene. Over thousands of years huge literature has been produced in various languages in India. Sri Aurobindo envisages spiritual humanism. What Sri Aurobindo points out to the philosophers of today is that human life, body and mind. The contribution of Sri Aurobindo as a perfect writer and crafts man is great. This tradition is well reflected in great works and epics such as Early Hindi literature like Awadhi and Braai and began around religious and philosophical poetry in medieval period. "Ramayana and Mahabharata" Arthasastra political science and kamasuthra are true reflection on the Indian literary Excellence.

The greatest exponents of the Hindi literature during the medieval times saw rapid growth of person and literature in India. With the passage of time, the dialect became more prominent and saw a great upsurge. A huge variety of literature spanning across history, culture and politics was written in this period. When British in India works started to be written in English language. As more Indians became well versed with the English language a number of works in English began to grow. Numerous Indian authors have made their mark in the world.

"The human cycle and the ideal of human society" together a complete picture of Aurobindo's supervision of the future. Indian English literature has attained an independent status in the realm of word literature. Indian literature refers to the literature produced on the Indian subcontinent until 1947 and the republic of India. There after the republic of India has 22 officially recognized languages. The major contribution to the Indian novel in English in the pre-independence should be considered and is done by men and not by women.

The word novel is derived from the Italian word novella which is from the plural of Latin Novellus, a late variant of Novus, meaning 'new'. So what is now in most languages a diminutive denotes historically the parent form. The novella was a kind of enlarged anecdote like those to be bound in the 14th century. The novel is a genre which may be defined as the craft of contriving, through the written word representation, of human life. Novel became an established art from in the works of "The Three-Msusketeers".

Mulk Raj Anand, R.K.Narayan, Raj Rao, and Vengataramani who were still actively engaged in creative writing of the turn of the century. The majority of Mulk Raj Anand's writings brings to the light the qualities of society and trails and tribulations of society and of less fortune. Addressing the evils existing in the society in Marxist terms, his novel also gives a graphic description of the daily and existing characters. His major novels Untouchable (1935), Coolie (1936), The village (1939), The Private Life of an Indian prince (1953), Lament in the Death of Master of Arts (1939) exemplify it.

Mulk Raj Anand is a progressive writer and his sympathies are with the 'under dogs' of society, their tale of woe, sweat and misery. He targets the evil of casteism and brings to the surface the issue of their profession in Coolie (1936). He presents a poverty stricken protagonist Munoo who portrays the hollowness of the society and the curse faced by the proletariat who was instrumental in bringing about an baroness of the quality that existed in India. He also advocated solution for the issue in both novels of downtrodden, the poor and the outcast who face economic hardship and emotional humiliation in a rigid social structure.

The greatest contribution of **Mulk Raj Anand** to Indian English fiction is vast coverage of various themes and their explication in an innovative and imaginative manner. The greatness of his fictional art lies in his ability to translate human misery and predicament into a live and pulsating reality. Some of the best Indo-Anglian novels written after independence have hunger, starvation and the degradation and their causes as their themes.

Mulk Raj Anand is the pioneer in this field and he has dealt with the themes of poverty, hunger and suffering of Indian masses in a number of his novels and short stories. **Mulk Raj Anand** is a committed writer with a social purpose. Coolie is a powerful social tragedy due to the artistic treatment of cruel inhuman social forges of poverty and exploitation.

The premature death of the protagonist becomes all the more tragic because he is an innocent child. He presents a poverty-stricken protagonist, Munoo who portrays the hollowness of the society and the curse faced by the proletariat. He was instrumental in bringing about an awareness of the inequality that existed in India. He also advocated solutions for the issues.

Raja Rao's reputation as a novelist of metaphysical and philosophy is amply justified by his substantial contribution in upholding these themes in his novel. Women in Raja Rao's novel suffer from domestic injustice and tyrannical tradition, but the writer suggests no way out of their dilemma. His women characters who are a little ambitious end up playing the devoted role of a wife like Savitiri in the **Serpent And The Rope (1960).**

Indian culture being rooted into his consciousness fails him to offer any concrete solution to the settling of women's issue. He analyses of modern India from a different perspective and elevates Hindu orthodoxy to a grand metaphysic. Reputation as a novelist of metaphysics and philosophy is amply justified by his substantial contribution in upholding these themes in his novels. Thus women in Raja Rao's novels suffer from domestic and tyrannical tradition, but he as a writer suggests no solution to their problems.

The later works by Raja Rao includes **The Cat and The Shakespeare** (1956) and **Comrade Kirillov** (1976), **Kanthapura** (1938) by Raja Rao emphasizes the influence of Gandhi and movement by highlighting the 1920's and the Gandhi – Irwin pact of 1931. He focuses a small village through which he explores the impact of the freedom movement on the villagers and also captures their roles in the struggle for Independence. Rao uses his novels to spread the Gandhian message and as a propaganda against social evils.

K.S. Venkataramani was well known during the nineteenth centuries. He is an Indo Anglian writer of the pre-independence era. He brilliantly focuses on the stupendous impact of Mahatma Gandhi in general. He is a novelist and short story writer. He interweaves the centrality of the novel keeping in view the Gandhian ideology of a self-sufficient and morally and economically integrated village community as the element unit of the super structure of Indian society. K.S. Venkataramani significant is mainly historical in the field of fiction. He makes of many social and political ideas made popular by Gandhi and other notional leaders in the twenties. He is a novelist and short story writer. His major works are **Murugan, The Trailer (1927), Andkandan, The Patriot (1934).**

R.K.Narayan is one of the famous writer in Indian writing in English. R.K.Narayan is a celebrated Indian-English writer. In his novel he has presented the people mainly focused on social and cultural life of Indians particularly of Hindu in Indian society, since time immemorial one section of the religious fundamentalist in this section.

The 'R' in the novelist's name stands for Rasipuram in Salem district where he was born on 10th October, 1906. And the 'K' stands for the name of his father, Krishna Swami Iyer. Narayan grew with his grandmother in Madras. Narayan was very impressive at school, failing recently in the high school and intermediata examination, a bitter experience reflected later in the character of Balu in "The Financial Expert".

He graduated from Maharaja College in Mysore in 1930. R.K. Narayan's stories grounded in a compassionate humanism and celebrated the human energy of ordinary life. R.K. Narayan is a Indian story teller in the Indian tradition of story-telling and the norm of his novels forward chronologically. Each succeeding event being linked casually with the previous one.

R.K.Narayan, one of the foremost Indian writers to gain international recognition, began his literary career in the 1930s when the freedom struggle was at its peak. Therefore, what strikes in Narayan's fiction are his scattered references to the then contemporary freedom movement and the imperialistic British rule. These references, recorded, as it were, in his novels seem to tell a profoundly ambivalent story about Narayan's relation to the political and nationalist movements that were popular across India during his early writing period.

Usually Narayan is an omniscient author writing in the third person and part of the story in the first person by the hero. Narayan had to support the family, which he tried by working as a clerk in the Mysore secretariant and later as a teacher in a village school. This phase of his life is reflected in the novel **The English Teacher.** He was soon with the teaching profession and started writing novels which won him world-wide recognition. Narayan fell in love with young girl by name Rajam married her even though they did not tally. He employed a money-minded astrologer, who at the sight of rupees, readily green-signaled the marriage. However after five years of happy marriage life.

Rajam died of typhoid in 1939, leaving Narayan in distraught, this was the gloomiest period he started writing novels at regular intervals. Narayan died in his late eighties. In an interview given to the Delhi Doordarshan he had said that his best novels are yet to be written. He is one of the most famous novelists in Indian literature. His stories were grounded in a compassionate humanism and energy of ordinary life. In his famous Auto-Biography he has written about 151 short stories. He won "Sahitya Academy Award" for the novel "THE GUIDE" 1961. Anand has given full-fledged novel on Valmiki. Narayan has presented socio-cultural reality in a scattered way with the main them in his works.

R.K. Narayan in his **'Malgudi world'** has presented the issue skillfully and aesthetically. Thus he is a story teller in the Indian tradition. Further his stress on the role of the family shows his Indianess.

His presentation of superstitions, ritual and faiths and beliefs point out that his novels abound with Indianans. But in one important respect he deviates from Indianans in almost all his writing including **Swamy and Friends, My Days, The Guide, The English Teacher, Waiting For Mahatma, The Dark Room, Grand Mother's Tale, Auto-Biography of My Days, The Financial Expert, The Vendor Of Sweet, Mr.Sampath-The Printer Of Malgudi, A Tiger Of Malgudi, The Painter Of Signs, The World Of Nagarathar, Malgudi Days, and Under The Bengan Tree.**

The Guide was written between 1956 and 1958 when he was in the United states. It was first published in Great Britain in 1958 and the reprint appeared in 2006. That reveals the popularity and greatness of the book. **The Guide** is the most popular novel of R.K.Narayan. It was published in 1958, and won the Sahitya Academy Award for 1960. It has also been filmed and the film has always drawn packed-houses. It recounts the adventures of a railway guide, popularly known as 'Railway Raju'. The novel begins with the release of Raju from prison. Whatever happens to Raju after his release till the present day of life is told by the narrator-novelist.

His first novel **Swami and Friends (1935),** is a long-winded account describing the undertakings of a gathering of students. That book and quite a bit of Narayan's later works are set in the invented South Indian town of Malgudi. Narayan regularly depicts the eccentricities of human connections and the incongruities of Indian everyday life, wherein present-day urban presence conflicts with old custom. His style is agile, set apart by pleasant amusingness, tastefulness, and straightforwardness.

The Bachelor of Arts (1937), is another novel dealing with college life. If **Swami and Friends** presents the school days of Swaminathan, **The Bachelor of Arts** tries to capture the feelings of Chandran, a young man of twenty-one, and **The English Teacher** similarly portrays the life, and elaborates the propensities of a teacher. The novel is full of some unexpected events.

The Dark Room (1939), is a common story well told and artistically narrated. The hero of this novel is Ramani, a successful branch manager of an Insurance Company. He has a middle-aged wife Savitri and three children namely Babu, Kamala and Sumati. The early chapters are devoted to his life and moods. The author does not bring in cheap conversion of hearts, so common in Indian stories. Instead, he sticks to realism.

The Financial Expert (1952) is a delightful novel for the gentle irony used to bring out the rise and fall of Maragayya, the financial wizard. The character of Margayya has been very well portrayed. He is a lovable rogue for his humour and confidence about his capabilities. His practical sense was quite developed and he attracted people for being a man of average emotions. The irony of Margayya's life was that he was mediocre and his area of operation was Malgudi, too small for the play of his imagination and experience.

The English Teacher (1945) is the third novel dealing with school and college life of India. It describes the life of English in a college, yet the main part of the novel centers round the love between Krishna and his wife Sushila. They were living a very happy life when suddenly Sushila died of typhoid. After her death Krishnan concentrated himself on bringing up his daughter Seela. Then the novel takes a mystic turn. Krishnan started receiving messages from his wife through a medium, a cheerful gentleman of philosophic outlook. Every week he used to go the medium for a sitting and he received him that they could only come from his wife's spirit.

The English Teacher put up his daughter Leela at a school run by a devoted master. The master's unhappy life and his devotion to the school form a subplot of the novel. In the end Krishna resigns his job and joins the primitive school so that he could talk directly to his departed wife, who, he believes, was a spirit. The English Teacher is a song of love in marriage. It is a psychic, mystic and spiritual study of some part of Indianness. It is a remarkable piece of art, full of unexpected things- turning of each page brings a surprise.

The atmosphere and texture of happiness and above all, its elusiveness have seldom been so perfectly transformed. It is an interesting, delicious idyll. It is a wonderfully painted miniature of India, wherein we can meet characters as vivid as Jane Austen's and move through landscapes as delicate as Corot's. Susila is a symbol of devoted Hindu wife who gives foremost importance to her family and her domestic duty.

The novel which starts as an interesting novel of domestic fidelity gets bogged in spiritual things and philosophic discussions which many a time tax the patience of the readers. As a work of art this novel could have been much better with less spiritualism. The characters are well worked out. Even the school master inspires dignity, fills the readers with a sort of reverence. But in spite of artistic style, subtle humor and irony, the novel suffers from a lack of interest.

CHAPTER II

A POST COLONIAL DISCOURSE IN R. K. NARAYAN'S

THE ENGLISH TEACHER

Post colonialism literature is the literature by people from colonized countries. It exists on all continents except Antarctica. Postcolonial literature often addresses the problem and consequences of the decolonization of a country, especially question relating to the political and cultural independence of formely subjugated people and themes such as racialism and colonialism. A range of literary theory has evolved around the subject. It addresses the role of literature in perpetuating and challenging what postcolonial critic Edward said refers to as cultural imperialism.

The consensus in the field is that "post-colonial", signifies a period that comes chronologically "after" colonialism. "Postcolonial," on the other hand, signals the persisting impact of colonization across time periods and geographical regions. Arguments in favor of the hyphen suggest that the term "postcolonial" dilutes differences between colonial histories in different parts of the world and that it homogenizes colonial societies. R.K.Narayan has emerged as a complex writer whose limpid novels reveal unsuspected depths.

The fabular quality in Narayan's fiction confers universality and depth and extends the significance of the novels beyond their immediate small-town context. The English Teacher in the light off postcolonialism by pointing out the tension or the conflict that one can find between colonialism and nativism. Teacher is set in the little town of Malgudi. Its protagonist and narrator is a lecturer named Krishna, who earns a hundred rupees a month lecturing on King Lear, Milton and so on to young Indian students. The story is about the collapse and recovery of happiness. Krishna's wife Susila dies halfway through the novel-yet she comes back to be with him forever. Krishna is enabled to establish, after a long practice, a physical contact with her spirit.

Gradually realization comes to him that a profound, unmitigated loneliness is the only truth of life-a realization that eases the pain of his wounded heart and enables him to come to terms with life. Thus the theme of crisis followed by reconciliation is presented here on a supernatural plane. **The English Teacher** is full of unexpected things-turning of each page brings a surprise. The atmosphere and texture of happiness, and above all, its exclusiveness, have seldom been perfectly transcribed.

The poignancy of the Sunday, the day out by the restaurant and by the river and inspecting the imposing empty villas, from which Susila returns mortally ill, is still felt. One weeps over the succeeding chapters. But Susila's death, as it turns out, is only to begin a second phase of love. Communications from her begin to come through once a week, in the evenings, in a little summerhouse by a lily pool, the hero sitting beside an old man, who does automatic writing.

Krishna was a lecturer in English the Albert Mission college, Malgudi. The novel **The English Teacher** describes the life of Krishna as a teacher of English in the college. But the important part of the novel centers round the love between Krishna concentrated himself on bringing up his daughter Leela. Then the novel takes a mystic turn. Krishna started receiving messages from his wife through a medium, a cheerful gentleman with a philosophic outlook.

Every week he used to go to the medium for sitting and he received minute instructions about the things of his house, which convinced him that they could only come from his wife's spirit. He puts up his daughter Leela to a school run by a devoted master. The master's unhappy life and his devotion to the school form a minor sub-plot in the novel. In the end Krishna resigns his job and joins that primitive school.

That very night, he could in his home, directly talk to and see the spirit off his wife because he had reached that stage of mental development. Thus this novel, which starts as an interesting novel of domestic felicity, later gets connected to the spiritual things and philosophic discussions, which tax the patience of the readers. As a work of art this novel is weak: the mystic world of spirit robs the novel of its realism. The characters are well worked out. Susila is a symbol of a devoted Hindu wife with whom her family and her domestic duty came first. Even the minor characters are clearly sketched.

The pricipal Brown, who gets angry because a student spelt the word 'honor' without 'u', stands in sharp contrast with professor Sastri of logic who was more practical and made more money out of estate brokage. Even the unhappy schoolmaster inspires dignity, fills the readers with a sort of reverence. But in spirit of its artistic style, subtle humor, the novel suffers from lack of interest.

Krishna, the hero of the **The English Teacher**, was a product of a system of education which makes up morons, cultural morons and his repeating mugged up notes from year to year was "a fraud practiced for a consideration of hundred rupees". He believed in social freedom and independence of mind and was opposed to the perpetuation of the system that crippled his imagination. He had studied English Literature and admired the wonderful writers, but he could do so only at the cost of his creativity.

His soul revolted against the English education. This led him ultimately to resign his job to maintain the freedom of conscience, which actually was the real goal of Mahatma Gandhi-political freedom being only a step towards the final liberation of mind of all temptations. It is only after this standpoint is accepted that the significance of the later-half of **The English Teacher** can be understood.

Krishna came under the spell of an old man who could establish contact with dead souls. Krishna also learned that technique and started communicating with the spirit of his wife. This habit was so developed that in the last scene of the novel he got out of his bed and garlanded his wife who, he felt was smiling, standing before him. Krishna was irked to see the English Principal Mr.Brown-who feels all-important and puts the blame for everything on Indians. The principal made a lot of fuss about the dropping of 'u' from 'honor' by a student without realizing the irony that Americans write 'honor' without 'u'. Thus the theme is the disillusionment of the Indian mind during the British regime and the consequent generation of self-consciousness.

The English Teacher's conversation to Indianism or his excessive interest in the mystery called India is not an accident. It is worked out in stages and is warranted by circumstances. The English Teacher opened on the note of marital bliss. In the first half of the novel, the novelist dealt with the thousand smiles, worries, trifles and follies of married life. In the latter half, after the death of his beloved wife, Krishna drifted toward spiritualism and found back his wife in imagination although lost in life.

This bare outline cannot describe the complexities of the narrative. For instance, one cannot simply oppose the two pedagogical approaches to education offered by the text. Both systems of education participate in English discourse: Although the Albert Mission College is obviously a British institution run by the British principal Mr.Brown, the experimental school run by Krishna's friend is described by him in a language that cannot be extricated from its Wordsworthian traces:

This is the meaning of the word joy-in its purest sense. We
can learn a great deal watching (children) and playing with
them. When I watch them, I watch them, I get a glimpse of
some purpose in existence and creation.   (ET, P. 125-126)

The Indian headmaster's words echo Krishna's own earlier statements, in which a similarly Wordsworthian trace occurs:

Nature, Nature, all our poets repeat till they are hoarse.
These   are   subtle,   invisible   emanations   in   nature's
surroundings; with them the deepest in us merges and
harmonizes. I think it is highest form of joy and peace we
can ever comprehend.   (ET, P. 10)

Thus, in both its institutional and literary articulations, English discourse underpins the narrative. Infact, when it is read, the entire narrative shows how English discourse regulates its reception and has its influence upon Krishna. In particular it also points out how the two forces provocation and seduction act as a function of that discourse.

The opening pages of **The English Teacher** offer a nightmarish look at the conditions under which Krishna teaches English Literature at the Albert Mission College to distracted and bored students. He has a comparatively good position and is respected in the community, but he is deeply dissatisfied. He fails to see that there isn't much point in what he is doing, as the novel open he takes stock of his life and reviews what he thinks of as his cow-like existence. Narayan describes Krishna's daily routine in a characteristically comic, ironic, and in a disengaged way:

...My duty ... had been admonishing, cajoling and brow-beating a few hundred boys of Albert Mission college so that they might mug up Shakespeare and Milton and secure high marks and save me adverse remarks from my chiefs at the end of the year. For this pain the authorities kindly paid me a hundred rupees on the first of every month and dubbed me a lecturer...I was constanly nagged by the feeling that I was doing the wrong work. (ET, P. 5)

This has a familiar ring to it; it could be the lament of any harassed academic. But by the time the last chapter of the novel has been reached Krishna had decided to resign and has become more explicit about the reasons for his dislike of his job.

19

We can find one's philosophy, when he is ecstasy or when he is in the most dejected mood. Here when Krishna is in most dejected mood and while he wants to resign his college job in search of a more harmonious existence, he wants his proposed letter of recognition-would be a classic one in its own way, describing his view on education system, in the following manner:

> I would send in a letter, which would be a classic in its own way, and which sings the fingers of whoever touched it. In it I was going to attack whole country of false education. I was going to explain why I could no longer stuff Shakespeare and Elizabethan metre and romantic poetry for the hundredth time into young minds and feed them on the dead mutton of literary analysis and theories and histories…This education had reduced us to a nation of morons: we were strangers to our own culture feeding on leavings and garbage.
>
> (ET, P. 25)

When Krishna gives up his job, he goes to teach in an experimental school for small children at a salary of 25 rupees a month, "...not with a feeling of sacrifice for a national cause, but with a very selfish purpose"(ET, P. 49) ... the purpose of finding inner peace.

Peace is sought through renunciation and through the repudiation of western values and attitudes; it is significant that Brown, the English principal of the college, cannot understand Krishna's motivation. When the latter says **"I have no use for money"** (50), Brown looks baffled because the rejection of the commercial motive stuns him.

Behind Krishna's abandonment of western culture there lies the rich Hindu tradition of contemplative asceticism, with its insistence on the primary importance of the cultivation of the inner self. A further significant aspect of **The English Teacher** is the way in which Krishna makes contact with the dead wife through seances with medium. The western reader is inclined to regard such activities as pre-posterous, but the joyful intimacy which Krishna comes to enjoy with his dead wife is one of the liberating forces at work upon his consciousness.

Narayan's perception of English education could not be clearer than this. Like most of his countrymen he too promotion of British culture which will effectively help to keep the country in subjugation and servility. This English education bred a class of youngsters revering the British culture, disregarding their own heritage and in some cases even showing contempt towards their own. However, Krishna is not ignorant of the aesthetic value of English literature and is not opposed to teaching it as a matter of pride or principle. His opposition to English education is a well-informed decision.

As Krishna later says to Mr. Brown who has been the principal of Albert Mission College for nearly 30 years **I revere them and I hope to give them to these children for their delight and entertainment, but in a different measure and in a different manner(ET, P. 5).** Krishna also knows that Mr. Brown will not be able to grasp the idea of self-development, inner peace and service in the Indian sense despite having been in India for three decades. **His Western mind, classifying, labeling, departmentalizing... (ET, P. 7),** is so unlike Krishna's mind.

The subjugated native understands the western conqueror, whereas the latter hardly makes an effort to learn the true culture, in his superiority – a fact that Indian vehemently resented at that time. Through Krishna, Narayan questions the idea of correct and pure English. When Krishna's English lecturer remarks on the importance of the English language and the need for preserving its purity and claims that his **thirty years in India had not been ill-spent it they had opened the eyes of the Indians to the need for speaking and writing correct English (ET, P. 6).** Krishna reacts by saying:

> **Let us be fair, Ask Mr. Brown if he can say in any one of the two hundred Indian languages: The cat chases the rat. He has spent thirty years in India. It is all irrelevant, said Gajapathy. Why should he think the responsibility for leaving is all on our side and none on his? Why does he magnify his own importance?**
>
> (ET, P. 6)

For Krishna, who studied in the English language, the English writers, poets and the Bible, and who made a career out of the same education, did not bring him comfort or support or relief at his time of need. He realized education and his choice of career have actually removed him from his roots and culture – and ultimately from reality. He realizes the futility of an education such as this that serves to effectively keep them in subjugation not only physically, but also in their approach to life and mind – set, being discontent with their lot and hankering after another culture which will not sustain them. It is to Narayan's credit that he had interwoven this – this theme of roots, with the theme of reality.

Gauri Viswanathan's findings in **The failure of English,** Masks of Conquest: Liberary study and British Rule in India, are proven most persuasively through this passage and the first section of Narayan's The English Teacher, where there seems to emerge a picture that evokes all the unfulfilled promises of English literary education for the British colonial administration:

> **The study of English literature had merely succeeded in creating a class of Babus (perhaps the Indian equivalent of the English philistines of whom Mathew Arnold wrote so soothingly) who intellectually equipped with the desirable amount of knowledge and culture. English education came to be criticized for its imitativeness and superficiality and for havinng produced uprooted elite who were at once apostates to their own national tradition and imperfect imitators of the west.** (ET, P.159)

In this passage, Viswanathan is concerned with the state of affairs for the British administration in the late 19th century. By the 1930s and 1940s, of course, 'the uprooted apostates' and 'imperfect imitators' she mentions have turned out to be either active nationalists or effective and, in some cases, subversive mimics, or both depending upon the dispersal of particular discursive functions when English discourse is refracted through a modern lens.

In Narayan's text, the provocation of English discourse for the young teacher is its injunction to 'stuff Shakespeare and Elizabethan meter and romantic poetry...into young minds and feed them on the dead mutton of literary analysis and theories and histories, at the expense of lessons in the fullest use of the mind" (The English Teacher 178). Time and again, the portrait of the relentless rules of discourse emerges:

> I spent the rest of the period giving a general analysis of the
> mistakes I had encountered in this batch of composition
> rather very, as such, for hence, spilt infinitives, collective
> nouns, and all the rest of the traps that the English
> language sets for foreigners. I then set (the students) an
> excercise in essay – writing on the epigram Man is the
> master of his own destiny. An idiomatic theme, I felt this
> abstract and confounded metaphysics, but I could not help
> it. I had been ordered to set this subject to this class.
>
> (ET, P.15)

24

In this passage, the subject-position of the teacher, or the set of rules enabling him to inhabit structures of power in the classroom, is most powerfully and ironically underwritten by both the colonial agency that assigns authority and the theme of the composition topic. We learn that the colonial agent in question is the British principal, Mr. Brown.

Brown exacerbates Krishna's provocation, reminding Krishna of the predicament of having to occupy intimately a discourse of power within which he himself seems disempowered. For instance, when Brown convenes a meeting of the teachers, he voices his anger at learning from an English honors student that the student did not know 'honors' was spelt with the obligatory British 'u'. In private Krishna responds to this sarcastically, Brown's thirty years in India had not been ill-spent if they had opened the eyes of Indians to the need for speaking and writing correct English! The responsibility of the English department was indeed very great.

Here, Krishna interestingly confronts Brown by showing the ignorance marked by the school principal's apparent knowledge. But he does not answer his own plaintive question; nor is his question actually answered by the novel itself. The conversation with Gajapathy comes to an end, and krishna concludes, after some agitated thinking, that **all this trouble was due to lack of exercise and irregular habits (ET, P. 7).**

What, then, keeps Krishna in a profession, which affords so little satisfaction? Here, one might invoke the complementary play of English discourse as excitement. Specifically, the articulation of an emphatic position on the ideological practices of colonialism and nationalism is pre-empted by the ability of the British literary tradition to excite Krishna.

When, at the end of the novel, Krishna resolves to resign from his job, he plays with the idea of stating anti-colonial motives in his registration letter. Significiantly, however, he cannot actually mobilize those anti-colonial statements in his letter of resignation because they are like a rabid attack on all English writers, which was hardly the purpose. **What fool could be insensible to Shakespeare's sonnets or the 'Ode to the West wind' or 'A thing of beauty is a joy forever? I reflected (ET, P. 78).**

This question poignantly rewrites Krishna's attempted negotiation of nationalist issues. Indeed, the appeal of the British literary canon is articulated throughout the text, and everywhere its function is to forestall a radical political critique. The liberal humanist assumptions at work here are clear: one sees the characteristic celebration of the human imagination, which is seen to function autonomously and independently of the public and political domains. Yet these very assumptions release immense complications when they are received as supposedly self-evident truths by Krishna.

For, recast in colonial India, the aesthetics of liberal humanism cannot be diverted of their political weight. Krishna simply cannot distinguish the literature's colonial, ideological traces in his liberal humanist reception of it. Later it gives an idea of how this inability was historically inflected and produced rather than a mark of some sort of self-willed failure on Krishna's or Narayan's part. Viswanathan's point of view is that

> Momently locating, then, but never quite fixing the repetitious habits of attempted negotiations and extrications, The English Teacher remains in what appears to be moment, which endlessly enacts, without resolving, the play of in-excitement.
>
> (ET, P. 234)

To some extent, these explanations help to contextualize and explain why and how English discourse could figure in Narayan's identification with and reception of it. It must be added, however, that in the modern 1940s, The English Teacher assumes a particular global, geopolitical dimension in its project to represent India to the West and the West-like in the West's own terms. Such a solidified material project would not have been possible in the nineteenth-century India, where more fluid, contradictory or correspondingly, more resistant readings of English discourse were occurring.

Another component of Krishna's journey is that he encounters the coexistence of western and native cultural attitudes, which also represent the attitudes of Indians of a newer and older generation. For example, when Susila is ill she is treated both by doctor who practices Western scientific medicine, and by a Swamiji who uses mystical methods of healing. The Swamiji is summoned by Susila's mother, representing an older generation that Krishna himself, who believes the 'evil eye' could have fallen on her daughter:

She was convinced that the evil eye had fallen on her daughter

And that at the new house a malignant spirit had attacked her.

She admonished me: you should never step into an unknown

House in this manner. You can never be sure. How do you know

What happened to the previous tenants or why they left? She went

Out in the evening and visited a nearby temple and prayed to the

God for her daughter's recovery. She brought in regularly every

Evening sacred ash and vermilion and smeared it on her

Daughter's forehead.   (ET, P.33)

And in yet another instance it is notable that Krishna feels ashamed that the doctor finds Swamiji in the house, showing that he is alien from, and embarrassed by, the native culture of the older generation of his own country.

28

Meanwhile, the doctor's car stopped before the house, and I heard his steps approaching. I felt ashamed and wished I could Spirit away this mystic. The doctor came in, and saw him and Smiled to himself. The mystic sat without noticing him, though looking at him. My mother-in-law's idea of treatment, I said apologetically. Ah, no, don't belittle these people, said the doctor. There is a lot in him too, we don't know. When we understand it fully I am sure we doctors will be able to give more complete Curses. He said this with a wink at me.

<div align="right">(ET, P. 85)</div>

In the event, both the scientific and the mystical attempts at healing fail, and Susila dies. Narayan presents us with the coexistence of these two systems of thought in Indian culture, but does not make an issue of being for one and against another because, in the matters of life and death that he wants to focus on here, the distinction between Western and Eastern thought becomes insignificant.

Other instances of the juxtaposition of English and native cultures can be seen in the novel. For example, it may be significant to point out the street where the headmaster lives, with its poor sanitation, and the place where the wild-looking children rolled about in the dust: the street is named Anderson Street. The name itself brings many aspects to think about:

Who is the Anderson of this lane? I asked, looking at the impressive nameplate nailed on to the wall of a house. God knows. At least to honor the name I hope they do something for this place... I have Often tried to find out who Anderson was. But nobody seems to Know. Perhaps some gentleman of the East India Company's days!

(ET, P.142-143)

But while this observation is potent, it is the observation he wishes to make on the educational system towards the end of the novel, which represents the main focus of his attack. The final stage of Krishna's Journey takes him further from the Western intellectual frame of mind, which though influenced him in the beginning later makes him turn towards his own native Indian spiritual practices.

To reach his goal of harmonious existence, he takes up his deceased wife's physically-communicated challenge, which he receives initially through a medium, to develop his mind sufficiently to communicate with her physically himself, and bridge the gap between life and life-after-death. Although initially he had been bemused by his wife's devotional practices, mocking her with "Oh! Becoming a Yogi! (32). He now relies on her to guide him, from beyond the grave, in his self-development.

This self-development consists of Zen-like meditation in which, for a certain amount of time each day, he empties his mind. His main motive for undertaking this development is to have closer psychic communication with his wife, but he also experiences a general improvement in his state of mind as a result. It was a perpetual excitement, ever promising some new riches in the realm of experience and understanding... there was a real cheerfulness growing within me, memory hurt less...(ET, P.162)

Compare this to the boredom and spiritual deadness he had come to find in Western literature and philosophy and one sees how he has found something truly enriching in his native culture. The simply message to 'belief' which his wife offers as the key to his progress also shows hoe inadequate the western approach, with its classifying, labeling, departmentalizing, was for his real needs, 'Belief, Belief' above reason, skepticism, and even immediate failures, I clung to it (ET, P. 162).

In R.K. Narayan's **The Bachelor of Arts** (1937), which prefigures some of the concerns explored by the author in **The English Teacher** (1935), the system of education which produces Chandran as a bachelor of arts is represented as having a disruptive effect in Indian society. The representation of English education, especially English literary education, demonstrates how far it is divorced from the everyday life of the Indian students.

The English Teacher, Assistant professor Mr.Gajapathy, is presented as one who has un questioning accepted the greats of English literature, but refuses to by intimated by big names in literary criticism:

> Though Dowen had said so-and-so Mr.Gajapathi was not one to be browbeaten by a big name. No doubt Bradly and others Had done a certain amount of research in Shakespeare, but one Couldn't accept all that they said as gospel truth. Although he Himself read Shakespeare in a sing-song fashion, with a vernacular Twang, he claims that not ten persons in the words had understood Shakespeare; he arrested that there were serious errors even in Flower's Modern English usage; he corrected everybody's English; He said that no Indian could ever write English; this statement hurt All his colleagues, who prepared their lectures in English and wished To think that they wrote well.
>
> (ET, P.23)

While Narayan's own tone is clearly ironical and makes gentle fun of The English Teacher, his description suggests that Indians were questioning Anglo-centric critical authority and quietly appropriating English literature as well as critical perspectives to it. The prestige attached to English in tertiary education is also reflected in Mr. Gajapathi's attempts to put all others users of English in their place. Narayan's defense of his position as an Indian writing in English is worth quoting. His views are as follows:

32

We have fostered the language for over a century, and we are entitled to bring it in line with our own thought and idiom. Americans have adapted the English language to suit their native mood and speech without feeling apologetic, and have achieved directness and unambiguity in expression. (ET, P.197)

Narayan has expressed mixed feelings about the effect of the rise of English upon Indian languages, literature and cultures. In 'The English Teacher' (1945) published just before Independence, the English head teacher is keen to preserve the purity of the language, much to the anger of the protagonist Krishna, who abandons his teaching career, and repudiates the education. This hostility may have something to do with the fact that Narayan's father was a head teacher. Nevertheless the English language itself he later imagines arguing:

I will stay here; whatever may be the rank and status you may assign me - as the first language or the second language or the thousandth.You may banish me from the classrooms, but I can always find other places where I can stay... I am more Indian than you can ever be. You are probably fifty, sixty, or seventy years of age, nut I've actually been in this land for two hundred years. (ET, P.15)

CHAPTER III

CONCLUSION

To state in conclusion for Narayan, English is as Indian as any other language used in the subcontinent. Hence he has remained committed to writing his novels in standard English if with a local habitation and a name. That name is Malgudi. The important aspects such as A dour indictment of the English system of education, co-existence of East and West, The preference of Eastern aesthetic way of life. Narayan's contempt for those Indians who disregard their own native culture and his use of English in the novel paves a way for the readers to read the novel The English Teacher. in the light of postcolonialism.

Krishna was the teacher of English in Albert Mission College, Malgudi. Though he was married and had a seven months daughter Leela, he was leading a lonely life in the college hostel. He received two letters one from his wife Susila and the other from his father. His wife wrote that his daughter had an eye on her like an intelligence officer and seemed to be asking when his father would take her away her home. His father informed him with his and his father-in-law's suggestion that he should lead a family life. Krishna searched frantically a suitable house and paced towards the station excitedly, anxiously and hurriedly. His mother had come from village to sat the house in order and to receive and welcome her daughter-in-law ceremoniously.

Expect for a brief quarrel when Susila, his wife, sold his shricking alarm piece, they never again quarreled, especially for the sake of their child. They led an idyllic, ecstatic married life. But misfortune lay lurking in store for them. Krishna's father offered them to advance a substantial amount of money to purchase a house. On their way to Sastri's house, who was secretary of the Lawley Extension Housing Scheme, they took their breakfast at the Bombay Anand Bhavan restaurant where Susila caught typhoid. Then Susila later was imprisoned in the hell-like foul lavatory of the house which they had selected. A dirty fly sat on her lips. She washed her lips and face several times.

Even then she felt so squeamish that she kept her two lips separate. She did not feel like taking meals. She suffered from fever and spiting headache. Krishna consulted Shanker the famous doctor of the city. This famous doctor seemed to be foolish, complacent and irresponsible. He prescribed for Susila medicine without examining her. He had been treating her for malaria whereas, as the belated report showed, she had been suffering from typhoid. But by the time the typhoid report came, the condition of Susila had already worsened.

The condition for want of proper medicine: when the typhoid report had appeared, the parents of Susila had come to serve and nurse her. The parents of Susila, especially her father, sat by her, consoling and encouraging, and telling her anecdotes and stories. They looked after the child in the day time, told her tales, taught her lessons and took her for shopping. They loved her to the point of spoiling her. Susila's father believed in spoiling the child.

Susila's mother had be-friended Granny, the old woman cooks, and they told each other in the kitchen their life and philosophy. Susila's mother, with the help of Granny had arranged an exorcist who came and smeared the sacred ash on the forehead of Susila, to drive away the Evil Spirit. She was superstitious and believed that an Evil Eye had attacked her daughter. She went to the nearby temple, brought sacred ashes and smeared it on the forehead of daughter. Susila's parents suffered secretly and prayed for her recovery.

Krishna's mother, who had a passion for house-keeping, could not visit Malgudi to see Susila who had a passion for budget keeping. Krishna had become a willing nurse to his wife. He set by her from down till late night, recording her temperature, administering her medicine and telling her tales. When she suffered from high fever and complained of splitting headache, he ends caringly called her child caressed her forehead. He began to suffer from sleeplessness on account of anxiety for his wife.

Sometimes he started from her sleep and went to her room to ascertain that she was all right. Her condition deteriorated gradually. She suffered from delirium. She felt mentally deranged. She complained to her husband, that her father was a bad man and was snatching her gold chain. The doctor brought with him a famous Madras physician for expert second opinion. But the foolish doctor did not follow the physician's prescription. He became nervous, hopeless and helpless and bit his nail in disappointment. Susila left for heavenly abode.

The death of his darling wife left Krishna strewed. Life seemed to him meaningless. He felt lonely, utterly grief-stricken and uprooted. He thought of thousand ways of putting an end to his life. His wife, who loved him extremely, loved him even more after her death. Desperately and frantically, with the help of her fellow souls in heaven, she sought for a spiritual Medium man through whom he could communicate with her husband.

She perfected the art of psychic-development so that she could communicate with her husband successfully. She, who, when alive, she loved her husband, like Viola in Shakespeare's 'Twelfth Night', silently, expressed in communication her love for him and the child. She guided her husband in the psychic-development so that he could communicate with her successfully. She feared that if he repeatedly failed in communicating with her successfully, he might lose faith in the existence of her soul and leave all his efforts at communications.

Therefore she advised him to postpone his efforts at communicating with her for some time. He, in order to concentrate on psychic development, resigned from his job. He told Mr.Brown the principal of the college that he was leaving his job because he wanted to teach in school. He had be-friended one headmaster who was running a school and was leading a miserable married life. Krishna loved his child so extremely that whenever he could not devote time to her child, he felt rapturous and song merrily. But when he could not communicate successfully, he felt himself to have miserably fallen into an abyss without the help of a ladder to come out of it.

Ultimately unable to suffer any longer the unbearable pain of separation from his wife he shared her fate, and accompanied her to heaven. There are two kinds of plot, organic and episodic. The plots of Narayan are not episodic as they are in the novels of Fielding and Dickens. His plots, like those of Jane Austen, are organic. They are not simple but complex.

They move forward as well as backward like the pendulum of a clock. They are complex because they are characterized, like those of Virginia Woolf and James Joyce, by the stream of consciousness technique. They are characterized by Hamlet-like brooding, Browning-like reflection and a romantic poet-like nostalgia. Let us first of all see the story, the raw material of the novel which Narayan integrates into a plot.

Narayan has divided the story into two parts. The first part deals with the exultant serene married life of Krishna and Susila. There is a small tiff between them when Susila sells the favorite, striking time piece, magazines and newspapers of Krishna. But this brief tiff brings them closer. The nightmarish days of trail and tribulations of sorrow and gloom, of restlessness and anxiety follow when Susila falls seriously ill, and dies.

The second part deals with the consequent excruciating pangs of sorrow, disappointment, disillusionment, emptiness and blankness. Krishna feels lonely, desolate, deserted. He thinks of thousand and one ways of committing suicide.

But for his love for his child he would have put an end to his life. Then, with the help of a Medium man, he begins to communicate with his wife, Susila. (The soul of) Susila loves her child and Krishna even more after her death. She is restless for communicating with her husband. She guides him about the psychic-development. When her husband cannot communicate successfully, she asks him to postpone his efforts at communication lest he should lose his faith in the existence of her soul, and leave his efforts completely whenever Krishna communicates successfully, he feels ecstatic. Ultimately when he cannot suffer any longer the pangs of separation, he shares the fate of his wife.

The beginning of the novel is almost Aristotlean. It has a beginning before the reader does not need to be told anything to understand the story. The middle part is logical shaping of the beginning. In the beginning we see Krishna reading his father's letter informing him that his wife and children want to join him. The middle life is the happy married life and the generous offer of Krishna's father's for purchasing the house. This offer takes them to visit Bombay Anand Bhavan restaurant where Susila catches typhoid and to the house where in a foul lavatory she was killed by a fly. So the end is the logical consequence of the middle.

We find here in the novel action and drama. The scene in which the headmaster tells about the prediction of his death, Krishna's visit to the headmaster's house, his revelation of this prediction to his wife, the lamentation of the headmaster's wife, the crowding of people about the headmaster's house, the headmaster being found grinning in the school compound, his visit along with Krishna to his house, his explanation of

prediction to the emerging crowd, the clinging of the headmaster's wife to his feet, the headmaster's declaration of his resolution to live apart from his family - is full of drama and action and follows on the heels of a serene scene of spiritual communication.

Narayan possesses the architectonic quality which is very rarely found. We find in 'The English Teacher' character, plot, irony, fate, society, Malgudi and autobiography harmoniously blended and feeding one another. This examination shows that **The English Teacher**, though an unconvincing tragedy, is one of the finest novels of R.K.Narayan.

WORKS CITED

PRIMARY SOURCES:

I

NARANYAN, R. K.　　:　The English Teacher

Mysore: Indian Thought Publications

1946, Print

II　## SECONDARY SOURCES:

SAXENA, G.C.　　:　Narain's

Educational publishers, Agra

BHABHA, HOMI　　:　The Postcolonial and the postmodern

The Location of Culture, Oxford

Blackwell publishers, 1994.

III NET SOURCES:

www.languageindia.com.

www.answers.com/topic/R.K.Narayan

www.english-literature.org/essays.html

GANESAR COLEEGE OF ARTS AND SCIENCE
DEPARTMENT OF SOCIAL WORK
MELAISIVAPURI

M.SHARMILA DEVI , MSW.,M.PHIL.,

Head & Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled **"A STUDY ON STREES AMONG THE WOMES IN PONNAMARAVATHY TOWN"** is submitted by **A.BHARATHIRAJA (Reg.No.CB18A144002)** in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: MELAISIVAPURI

Date: 22.03.2021

Research Supervisor

(M.SHARMILA DEVI)

Dr. G.SUNDHARAMOORTH 3/3/21

MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D

Lecturer

Department of Social Work

Government Arts and Science College

Kurumbalur, Perambalur – 621 107.

DEPARTMENT OF SOCIAL WORK
GANESAR COLEEGE OF ARTS AND SCIENCE
MELAISIVAPURI

C.VENGATESHWARAN

Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "A STUDY ON SOCIO ECONOMIC CONDITIONS AMONG THE WORKING WOMENS IN GANESAR ARTS AND SCIENCE COLLEGE, MELAISIVAPURI" is submitted by **R.KESAVAN (Reg.No.CB18A144005)** in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: melaisivapuri

Date: 22. 3. 21

Research Supervisor

Dr. G.SUNDHARAMOORTHI (C.VENGATESHWARAN)
MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur – 621 107.

DEPARTMENT OF SOCIAL WORK

GANESAR COLEEGE OF ARTS AND SCIENCE

MELAISIVAPURI

C.VENGATESHWARAN

Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "A STUDY ON SOCIO-ECONOMIC CONDITIONS AMONG THE OLD AGE IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT" is submitted by C.KUMAR (Reg.No.CB18A144006) in partial fulfillment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: melaisivapuri

Date: 22/03/2021

Research Supervisor

(C. VENGATESHWARAN)

Dr. G.SUNDHARAMOORTHI 23/03/2021

MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D

Lecturer

Department of Social Work

Government Arts and Science College

Kurumbalur, Perambalur – 621 107.

GANESAR COLEEGE OF ARTS AND SCIENCE

DEPARTMENT OF SOCIAL WORK

MELAISIVAPURI

M.SHARMILA DEVI , MSW.,M.PHIL.,
Head & Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "IMPACT ON NATIONAL RURAL EMPLOYMENT GUARENTEE PROGRAMME IN AGRICULTURE SECTOR IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT" is submitted by K.MURUGAN (Reg.No.CB18A144007) in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: Melaisivapuri   Research Supervisor

Date: 22/03/21

(M.SHARMILA DEVI)

Dr. G.SUNDHARAMOORTHI
MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur – 621 107.

GANESAR COLEEGE OF ARTS AND SCIENCE
DEPARTMENT OF SOCIAL WORK
MELAISIVAPURI

M.SHARMILA DEVI , MSW.,M.PHIL.,

Head & Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "**A STUDY ON STREES AMONG THE WOMES IN PONNAMARAVATHY TOWN**" is submitted by **P.PRADHEEP (Reg.No.CB18A144009)** in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: MELAISIVAPURI

Date: 22 |03| 2021

Research Supervisor

(M.SHARMILA DEVI)

23|03|2021

Dr. G.SUNDHARAMOORTHI
MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur - 621 107.

GANESAR COLEEGE OF ARTS AND SCIENCE
DEPARTMENT OF SOCIAL WORK
MELAISIVAPURI

M.SHARMILA DEVI , MSW.,M.PHIL.,

Head & Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled **"A STUDY ON STREES AMONG THE WOMES IN PONNAMARAVATHY TOWN"** is submitted by **C.PRASANTH (Reg.No.CB18A144010)** in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: MELAISIVAPURI

Date: 22. 03. 2021

Research Supervisor

(M.SHARMILA DEVI)

Dr. G.SUNDHARAMOORTHI

MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D

Lecturer

Department of Social Work

Government Arts and Science College

Kurumbalur, Perambalur – 621 107.

DEPARTMENT OF SOCIAL WORK
GANESAR COLEEGE OF ARTS AND SCIENCE
MELAISIVAPURI

C.VENGATESHWARAN
Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "A STUDY ON SOCIO-ECONOMIC CONDITIONS AMONG THE OLD AGE IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT" is submitted by S.RAHUL (Reg.No.CB18A144011) in partial fulfillment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: Melaisivapuri

Date: 22·03·2021

Research Supervisor

(C. VENGATESHWARAN)

Dr. G.SUNDHARAMOORTHI

MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D

Lecturer

Department of Social Work

Government Arts and Science College

Kurumbalur, Perambalur - 621 107.

28/03/24

GANESAR COLEEGE OF ARTS AND SCIENCE
DEPARTMENT OF SOCIAL WORK
MELAISIVAPURI

M.SHARMILA DEVI , MSW.,M.PHIL.,

Head & Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "**IMPACT ON NATIONAL RURAL EMPLOYMENT GUARENTEE PROGRAMME IN AGRICULTURE SECTOR IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT**" is submitted by **P.SANKAR (Reg.No.CB18A144012)** in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: Melaisivapuri

Date: 22.03.2021

Research Supervisor

(M.SHARMILA DEVI)

Dr. G.SUNDHARAMOORTHI
MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur – 621 107.

DEPARTMENT OF SOCIAL WORK
GANESAR COLEEGE OF ARTS AND SCIENCE
MELAISIVAPURI

C.VENGATESHWARAN

Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "A STUDY ON SOCIO-ECONOMIC CONDITIONS AMONG THE OLD AGE IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT" is submitted by A.SATHISH (Reg.No.CB18A144013) in partial fulfillment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: melaisivapuri

Date: 22-03-2021

Research Supervisor

(C. VENGATESHWARAN)

Dr. G.SUNDHARAMOORTHI 23/3/2021
MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur – 621 107.

DEPARTMENT OF SOCIAL WORK
GANESAR COLEEGE OF ARTS AND SCIENCE
MELAISIVAPURI

C.VENGATESHWARAN

Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "A STUDY ON SOCIO ECONOMIC CONDITIONS AMONG THE WORKING WOMENS IN GANESAR ARTS AND SCIENCE COLLEGE, MELAISIVAPURI" is submitted by S.SHANMUGAPRIYA (Reg.No.CB18A144014) in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: Melaisivapuri

Date: 22-03-21

Research Supervisor

(C.VENGATESHWARAN)

Dr. G.SUNDHARAMOORTHI
MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur – 621 107.

DEPARTMENT OF SOCIAL WORK
GANESAR COLEEGE OF ARTS AND SCIENCE
MELAISIVAPURI

C.VENGATESHWARAN

Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "A STUDY ON SOCIO ECONOMIC CONDITIONS AMONG THE WORKING WOMENS IN GANESAR ARTS AND SCIENCE COLLEGE, MELAISIVAPURI" is submitted by **V.SOWNDHARYA (Reg.No.CB18A144016)** in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: Melaisivapuri

Date: 22.03.2021

Research Supervisor

(C.VENGATESHWARAN)

Dr. G.SUNDHARAMOORTHY
MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur – 621 107.

GANESAR COLEEGE OF ARTS AND SCIENCE
DEPARTMENT OF SOCIAL WORK
MELAISIVAPURI

M.SHARMILA DEVI , MSW.,M.PHIL.,

Head & Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "A STUDY ON STREES AMONG THE WOMES IN PONNAMARAVATHY TOWN" is submitted by S.SURIYA PRAKASH (Reg.No.CB18A144018) in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: Melaisivapuri   Research Supervisor

Date: 22:03:2021

Dr. G.SUNDHARAMOORTHI   23/3/2021   (M.SHARMILA DEVI)

MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur – 621 107.

DEPARTMENT OF SOCIAL WORK

GANESAR COLEEGE OF ARTS AND SCIENCE

MELAISIVAPURI

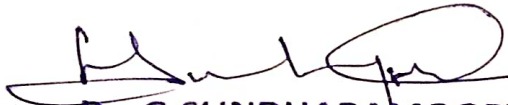**C.VENGATESHWARAN**

Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled "**A STUDY ON SOCIO-ECONOMIC CONDITIONS AMONG THE OLD AGE IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT**" is submitted by **M.VIJAYA KUMAR (Reg.No.CB18A144019)** in partial fulfillment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: Melaisivapuri

Date: 22/03/2021

Research Supervisor

(C. VENGATESHWARAN)

Dr. G.SUNDHARAMOORTHI
MSW.,M.Phil.,M.H.R.M.,MUPC.,Ph.D
Lecturer
Department of Social Work
Government Arts and Science College
Kurumbalur, Perambalur – 621 107.

A STUDY ON SOCIO-ECONOMIC CONDITIONS AMONG THE OLD AGE IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT

Submitted to the Bharathidasan University in partial fulfilment of

the requirements for the award of degree of

BACHELOR OF SOCIAL WORK

Submitted

By

S.RAHUL

(Reg.No.CB18A144011)

Under the guidance & supervision of

M.SHARMILA DEVI, M.S.W.,M.PHIL.,

Head, Department of Social Work

Ganesar College of Arts and Science

GANESAR COLEEGE OF ARTS AND SCIENCE

DEPARTMENT OF SOCIAL WORK

MELAISIVAPURI

March -2021

DECLARATION

I, hereby declare that the project "**A STUDY ON SOCIO-ECONOMIC CONDITIONS AMONG THE OLD AGE IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT**" submitted to Bharthidasan university**,** is a record of original project done by me under the supervision of **M.SHARMILA DEVI,M.S.W., M.PHIL.,** Head and Asst professor, Department of social work, Ganesar College of Arts and Science . This work did not from part of any research or degree awarded by any other University or College elsewhere in India or Abroad.

Place: **Signature   of   the**
candidate

Date: **(S.RAHUL)**

GANESAR COLEEGE OF ARTS AND SCIENCE

DEPARTMENT OF SOCIAL WORK

MELAISIVAPURI

M.SHARMILA DEVI , MSW.,M.PHIL.,
Head & Assistant Professor

BONAFIDE CERTIFICATE

This is to certify that the project work entitled **"A STUDY ON SOCIO-ECONOMIC CONDITIONS AMONG THE OLD AGE IN VARPATTU VILLAGE PUDUKOTTAI DISTRICT "** is submitted by **S.RAHUL (Reg.No.CB18A144011)** in partial fulfilment of the requirement for the award of the degree of Bachelor of social work in Bharathidasan University under my guidance. This project is original one and not submitted earlier for the award of any degree/diploma elsewhere.

Place: **Research**
Supervisor
Date:

                                                                 (M.SHARMILA DEVI)

ACKNOWLEDGEMENT

First of all I dedicate my sincere thanks to the almighty god for the blessing showered on me to complete the project successfully.

I thank my parent for their blessing and encouragement and for this Research.

I express my sincere thanks to **Dr.M.SELVARAJ,** Principal, Ganesar College of Arts and Science, Melaisivapuri, Ponnamaravathy, for their encouragement throughout this Research.

I feel my privileged in extending my sense of gratitude to my guide **C.VENGATESHWARAN, MSW., M.Phil., (Ph.D)** Assistant Professor, Department of Social Work, Ganesar College of Arts and Science, Melaisivapuri, Ponnamaravathy, who served as real guiding and inspiring to complete this Research.

My sincere thanks to **M.Sharmila devi , MSW ., M.Phil.,** Head of the department of social work, at Ganesar College of Arts and Science, Melaisivapuri, Ponnamaravathy, for their encouragement throughout this Research

Last but not least, I would like to thank my family members, friends and Relatives for their whole hearted support and encouragement. .

Thanking you.

S.RAHUL

CONTENT

LIST OF TABLES

S.NO	Title	PAGE NO
1	DISTRIBUTION OF RESPONDENTS ACCORDING TO GENDER	
2	DISTRIBUTION OF RESPONDENTS ACCORDING TO AGE	
3	DISTRIBUTION OF RESPONDENTS ACCORDING TO EDUCATIONAL QUALIFICATION	
4	DISTRIBUTION OF THE RESPONDENTS ACCORDING TO MARITAL STATUS	
5	DISTRIBUTION OF RESPONDENTS ACCORDING TO MONTHLY INCOME	
6	DISTRIBUTION OF RESPONDENTS ACCORDING TO OCCUPATION	
7	DISTRIBUTION OF RESPONDENTS ACCORDING TO CHILDREN	
8	DISTRIBUTION OF RESPONDENTS ACCORDING TO NUMBER OF CHILDREN	
9	DISTRIBUTION OF RESPONDENTS ACCORDING TO OWN HOUSE	
10	DISTRIBUTION OF RESPONDENTS ACCORDING TO TYPE OF OWN HOUSE	
11	DISTRIBUTION OF RESPONDENTS ACCORDING TO ARE YOU STAYING	
12	DISTRIBUTION OF RESPONDENTS ACCORDING TO TOILET FACILITIES	
13	DISTRIBUTION OF RESPONDENTS ACCORDING TO PENSION	
14	DISTRIBUTION OF RESPONDENTS ACCORDING TO KIND OF PENSION	

15	DISTRIBUTION OF RESPONDENTS ACCORDING TO HEALTH PROBLEM	
16	DISTRIBUTION OF RESPONDENTS ACCORDING TO FEEL ISOLETED	
17	DISTRIBUTION OF RESPONDENTS ACCORDING TO AGRICULTURE LAND	
18	DISTRIBUTION OF RESPONDENTS ACCORDING TO SAVING HABIT	
19	DISTRIBUTION OF RESPONDENTS ACCORDING TO DRINKING WATER FACILITIES	

CHAPTER I

INTRODUCTION

India is a rich country with rich cultural heritage which is thousands of years old. Every one religion like Hinduism, Buddhism, Jain, and other religions belong to devotional schools, and folk traditions rules and guidelines on birth, growth and old age. Hindu Ashram system categorized the every individual's life span in four stages **Brahamacharya, Grihasta, vanaprasta and sanyasa.** The last stage of sanaysa had plenty of knowledge, an experience, which helps to lead ascetic life.

In all families, the aged are cared and obeyed for their services rendered by them for family members. Indian rural society's characterized by traditional systems like caste, family, kinship etc. caste and joint family systems and kinship encourage living together in neighborhood. This living together system helped the young and the old people to lead and enjoy happy life with fulfillment of all desires. These systems helped them to protect good health and contacts also. The knowledge elderly help to their group by way of setting disputes, conflicts; they give advices guidance for needy people. They engaged themselves in socio-religious activities and felt busy in life. Sometimes, aged feels helpless and useless about themselves and their family and in their community also.

This feeling give to anxiety and depression in old age ageing is a fact it. Some people have graceful ageing which consists of important three aspects. Like good adjustments and satisfaction of life they always maintain good understanding and affectionate relationship with family members and neighbors and with community. One the contrary some people feel and perceive agency as a problem and burden to the family. They feel neglected ignored and less respected in family. Elders often silent in their day today sufferings and incapability because they may be physically and mentally family and society elder people are likely to face some problems in daily life.

Old age diseases, diabetes and hypertension are common. These all physical problems reduce their mobility and increase the physical problems. Psychological problems are also common among elder one.

The loss of occupation is main cause for psychological depression in the minds of some people. The family members are unable to understand the mental condition of age old. Loneliness and feeling of isolation is main problems. Because of physical problems elder people face the social problems also some are very busy with their occupation and family responsibilities. In old age they stop to participate in social activities and reduce social contacts. Economic incapability also brings many problems among age old. They depend on their children and family members.

It disturbs the life of age old weak and sick persons and not earning and also not having saved enough for their last days they were facing a variety of problems. In olden days society provides the needed security and support to the aged their skills, knowledge, experience were also utilized for the development of family and society. Now in old age being retired from active duties and having fulfilled their responsibilities, the aged have plenty of fire time. They engaged in socio-religious activities and socio service activities also.

Old age is a universal phenomenon. The numbers of old people are increasing all over the world, both in absolute terms and in proportion to the population **(Hobman, 1979). Rosow (1962)** noted that marital status, health status, work and income are crucial factors for continued social integration. In India research on ageing and problems of the aged is in its infancy. Social surveys on the life and problems of the aged population in India have been conducted by a few sociologist, anthropologist, psychologist and demographers **(Bhatia, 1983).**

A considerable literature has now emerged regarding the nature of emotional, logistical and care giving support that families provide their older members **(Brody, 1985).**

Hence, it is observed that the increase in scientific concern for the old age is a result of rapid increase in the population of elderly persons above 60 years (**Bhatia, 1983**). The women among them are in a worse condition than men (**Sureender *et al.,* 1996**). Similarly those in rural areas are worse off than those in urban areas**. Sandhya (1996)** observes that the changing socio-economic scenario of our traditional groups. Similarly those in rural areas are worse off than those in urban areas. **Sandhya (1996)** observes that the changing socio-economic scenario of our traditional groups.

There are recognised age differentials between mortality in the developed and the developing countries, however on average, the older adult group span a 20 - 30 year period. The need to survey populations for census work and research has led to an arbitrary division of this group into **three ages of 'old',** based in part on retirement ages, and in part on the development of multimorbidity leading to frailty. Describing sub-groups in the 65+ population enables a more accurate portrayal of significant life changes. cut off points for each "age" has been challenging and remains without consensus with researchers suggesting different cut offs

The following is a starting point for considering the span of old age:

1.   Between 60 – 75 years = young old
2.   Between 75 – 85 years = old
3.   Those 85+ are considered the frail older population

As populations age, it will be of interest to see if these age bands alter.

The divisions confirm older people to be a varied group requiring consideration according to their needs. In 2001 policy from the United Kingdom in the form of the National Service Framework for Older People categorised the three cohorts broadly as:

- **Entering old age:** People from 50 to the official retirement age who have completed their career. They are supposed active and independent and many remain so into late old age. *Goals of health and social care policy: To promote and extend healthy active life, and compress morbidity (the period spent in frailty and dependency before death).*

- **Transitional phase**: A group in transition between healthy, active life and frailty, often occurring in the seventh or eighth decades, but can occur at any stage. *Goals of health and social care policy: To identify emerging problems pre-crisis, ensuring effective response that prevents crisis and reduces long-term dependency.*

- **Frail older people**: A vulnerable group due to health problems e.g. stroke or dementia, social care needs or a combination of both. Frailty often experienced in late old age, so services people should be designed with their needs in mind.

- **Goals of health and social care policy:** To anticipate and respond to problems, recognising the complex interaction of physical, mental and social care factors which can compromise independence and quality of life.

An Australian study 2020 investigating pre-frailty and frailty in healthy, independent community-dwelling adults suggests using frailty phenotypes (unintentional weight loss, exhaustion, low physical activity levels, poor strength, and slow to detect pre-frailty in younger community dwellers aged from 40–75 years.

CHAPTER- II

REVIEW OF LITERATURE

The "Handbook of Social Gerontology: Societal Aspects of Aging" **Tibbitts, 1970** was developed as a comprehensive reference book for educators and researchers.

"Hand book of Medical Sociology" **Howard, Levine, & et al, 1963** is a collection of 20 essays dealing with Sociology of Illness, Practitioners, Patients and Medical Settings, the Sociology of Medical Care and Strategy, Method and Status of Medical 36 Sociology etc. It gives an idea about the sociological perspective on health care and medicine. It provides a brief outline of how in the early 18th century.

The book "Post Modernism, Sociology and Health" **Nicholas, 1993**.sets out some of the components of a postmodern social theory of health and healing, deriving from theorists including Derrida, **Deleuze and Guattari, Foucault, Cixous and Kristeva.**

Gary and Ray in their book "Advances in Medical Sociology: Quality of Life in Health Care" bring together a variety of conceptual and methodological approaches to study health-related quality of life and represents the contribution of diverse disciplines to this emerging field.

The book begins with the editor's historical overview of the origins of the concept of quality of life and its policy practices in United Kingdom and **The United States Gary & Ray, 1994.**

In the book "Sociology" **Giddens, 1992** Giddens discusses and illustrates various issues related to Sociology of the body: health, illness and ageing.

"Keep Fit for Life: Meeting the Nutritional Needs of Older Persons**" World Health Organization & Tufts University School of Nutrition and Policy, 2002** is based on the review of scientific evidence linking diet and other factors such as exercise affecting nutritional status, disease prevention and health promotion for older persons. The study focused primarily on practical issues including the establishment of explicit recommendations to improve the health and nutritional status of older persons in a wide variety of socio- economic and cultural settings.

In the book "Loneliness, Health and Depression in Older Males" **Alpassi & Neville, 2003** the authors investigated the relationships between loneliness, health, and depression in older men. The analysis of the data showed that a diagnosis of illness or disability was unrelated to depression, but self-reported health was however associated with depression, with those reporting poorer health experiencing greater depression. Social support variables were unrelated to depression.

The most significant relationship to depression was that of loneliness, with lonelier men reporting higher scores on the Geriatric Depression Scale (GDS). Although research suggests that depression is often a response to declining health and functional impairment in the older adult, the present findings suggest that social isolation may also influence the experience of depression. Age-related losses such as loss of professional identity, physical mobility and the loss of family and friends can affect a person's ability to maintain relationships and independence, which in turn may lead to a higher incidence of depressive symptoms.

"Towards Age- Friendly Primary Health Care" **World Health Organization, 2004** publication aims to sensitize and educate primary health care providers about the scientific needs of the older people.

It addresses three major areas

(i) Information, education, communication and training
(ii) Health care management system and
(iii)The physical environment.

"Sociology of Health and Illness" by **Stephen Peckham** aims to act as an introduction to Sociology of Health in general through a collection of some key papers it highlights the increasingly important contribution Medical Sociology can make to the study of health care, public health, health care professional, health policy and health and illness **Peckham, 2004.**

Jeffrey, Cullen & et al in their book "Developing Integrating and Perpetuating New Ways of Applying Sociology to Health, Medicine, Policy in Everyday Life" discuss how the

Sociology as a discipline can help generate and nourish new forms of enquiry that can impact the way research questions are formed in the field of health and medicines Jeffrey,

Cullen, & et al, 2007 In his book **"Gender Difference in Health and its Determinants in the Old-age Population in India"** Biplab examine the gender deferential in health and its socio- economic and demographic determinants in the old-age population of India based on the **National Sample Survey data collected in 2004.** The results demonstrate that older Indian women experience poorer health despite their two years of higher life expectancy compared with males. As expected, the older people with poor socio- economic condition had poor health. Considering the socio-economic disadvantages of the Scheduled Caste population the ST population was an exception, those from rural areas, Muslims, the illiterate and those not working experienced poorer health compared with their counterparts. Apart from structural inequality in health status, significant deference in health outcomes by gender was also observed within each socio-economic group. In general, gender gaps in health outcomes against older women were found to be greater in the socio-economically advanced groups.

It was seen that with the advancement of socio-economic status, both males and females 39 gained better health, but the extent of the gain in good health was greater for males compared with females. **Biplab, 2009** In the study on **"An Introduction to the Sociology of Health and Illness" White, 2009** shows clearly that health and illness are the products not of biology alone but the society as well. He has tried to bring forward and discuss elaborately the impact of class, professional power, gender and ethnicity, in both shaping the disease as well as providing an account of how class, patriarchy and racism produce and distribute disease.

The author also elaborates several theoretical perspectives or approaches to flesh out the arguments. The **"Handbook of Medical Sociology" Chloe, Conrad, & et al, 2010** is a composition of articles by some of the outstanding scholars in Medical Sociology.

The book reflects important changes in the study of health and illness. In addition to chapters on the social impacts of gender, race, and socio-economic inequalities on health, there are also chapters that examine the influence of social networks, neighbourhoods, and social

capital. A section deeply examines illness, experience, and trajectories thus emphasizing social constructionist approaches.

In addition to focusing on macro issues like medicalization and illness contestation, it also looks at the subjective experience of illness. Sociological perspectives on disability and a sociological rendering of dying and the right to die are also discussed. Chapters in the third section recount shifts in the organization of health-care delivery and in the balance of power among institutional actors seeking to control it.

These chapters pay particular attention to some of the developments and new efforts to reform the system, with special emphasis on emerging actors that warrant sociological attention, such as pharmaceutical companies. Additional chapters in the third section highlight the growing pervasiveness and impact of evolving models of care and policy that are driven by a conviction that, greater use of evidence-based medicine and far more emphasis on care quality and safety are crucial for improving care and health outcomes. Chapters in the last section of the book focus on recent developments in Medical Sociology, as well as on the directions for future Medical Sociology works.

Irudayarajan *et al.,* **(1999)** made an attempt to obtain the view and perceptions of Indian elderly from different socio-economic settings on issues pertaining their needs and expectations from the family, the state and the society at large. Generally it is believed that the potential of contributing to the future by the elderly is limited.

The results from the five different group discussions carried out among elderly in Kerala and Tamil Nadu, highlight the differential needs and expectations depending on the familial, educational, occupational and residential background of the individual elderly. It was found that the perceptions of the elderly on their unmet needs depend on sex, education, occupation and residential background. And the female elderly favoured co-residence with children, which they felt was the best security in old age. But the males seemed to differ on this count.

A large number of elderly women are widowed (Asian women normally used to marry men 10 to 15 years older and consequently they had to have a longer period of widowhood). Their conditions are further. livelihood. In the younger age, the gender based social, cultural inequalities and differential role attributed to men and women become the root cause for the vulnerability in old age **Sen, 1994.** Thus in the family, the elderly couple must be given proper care and respect in order to lead a happy life. Hence, there are large gender differences, however, in the individuals available to the elderly as assessed by marital and household status that shows that significantly fewer men live alone, one-tenth of younger group and two-tenth of older men, proportions one-third that of women **Soldo, 1980.**

Studies conducted in North India and South India revealed the socio-economic conditions of elderly against the gender background depicting cases from Haryana state conducted by **Goswami *et al.* (2004) and Singh (2005)** they found that female elderly are economically dependent compare to male and the female illiteracy level is higher than male in term of livelihood female are more dependent. More numbers of female elderly are widows. In South India a study conducted by **Audinarayana *et al.* (2002)** found that the proportion of widowed, illiterates, non-working and thereby, not earning any income were significantly higher among females compared to males. Data from a multi-ethnic rural setting of Nadai district in West Bengal state **(Chakrabarti, 2006)** highlighted that Research in eight settlement colonies in India indicates that more older women than men consider their status with the family to have deteriorated with age **(Gibson, 1985).**

The socio-economic conditions of elderly with regard to gender differentials in education shows that studies like **Rao (2007)** found that a greater percentage (88 percent) of the elderly persons was illiterates such proportion were overwhelming among women than men, whereas the reverse trend was noticed in the case of those who studied upto primary school level. Half of the elderly were not working, one-fifth were working as agriculture labourers followed by cultivators and less than one-tenth were working in traditional occupations, skilled and unskilled works. Gender differentials in this regard were on the expected lines. **Venkateswarlu and Laxmipathi (2007)** observed that literacy is much higher among males as against females.

More than half of the elderly were widowed followed by currently married, whereas the proportion of widowed was more than two-thirds among females as against males. **Study in Tamil Nadu (Pappathi, 2007)** highlighted that a greater proportion were illiterates, half of them were working in agricultural and related occupations, slightly more than fifty percent were in widowhood status, getting low and moderate personal income as well as belonged to low and average monthly family income brackets.

Another study **(Swarnalatha, 2008)** in Andhra Pradesh state (at proportion of women (88 percent) were illiterates, whereas one-tenth had Chitoor district among 400 rural elderly women) revealed that a greater primary level education. Followed by 71 percent of elderly who were widowed, more than two-fifths were working as agricultural labourers and a greater percent of them were women whose annual income was less than Rs.11,000 (below poverty line), belonged to low socio-economic status and spend their leisure time activities mostly with peer group.

The study by **Sebastian and Sekher (2011)** in Kerala revealed that a large number of elderly (83 percent) were literates and as expected the proportion was higher among males than females. On the other hand, while about half of the sample elderly were widowed, such proportion was large in the case of females than their male counterparts. In the case of their occupation, it was found that slightly more than sixty five percent of the elderly were not-working and around one-tenth were cultivators and casual labourers.

There is a contrasting issue of rural urban socio-economic conditions of elderly. The debate encircle the arguments with regard to the support from these studies conducted in India which shows it is possible that rural elderly need more assistance from family members than do urban elderly because of relatively fewer formal support services in rural areas **(Scott and Roberts, 1987).** Poverty in rural areas as well as greater geographic dispersion exacerbates problems for rural older adults. It is generally recognised that rural elderly have fewer economic resources, greater chronic health problems, transportation problems and more substandard housing than their urban counterparts **(Youmans, 1977 and Kimmel, 1974).**

Older persons who live in small towns have been found to have lower incomes and poorer health than those in cities, where more than half have incomes near the poverty level **(Lawton, 1980).** Compared to their counterparts living in urban settings, elderly in sub-urban

communities tend to have higher incomes, are less likely to live alone, and report themselves to be in better financial and health status **(Logan and Spitze, 1988).**

Most people in India live in rural areas and the proportion of elderly in rural areas than in urban areas **(Chadha and Easwaramoorthy, 1993).** Rural society with its strong folk tradition is often distinguished from urban life by its emphasis based on strong bonds of kinship, neighbourliness and informal friendship ties developed as a consequence of the lengthy shared experiences of its members **(Wirth, 1938 and Redfield, 1947). Herbert and Wilkinson (1979)** report that elders in rural areas have good support systems such as friends, neighbours which are enviable in comparison to the apparent anonymity of the urban centres. However, the deprivations of rural elderly have also been well documented. For example**, Chadha and Eswaramoorthy (1993)** with research evidences have illustrated that rural elderly have less income, poor health, poor housing, poor access to health care and transportation. Thus the findings of studies have revealed many merits and demerits associated with living in rural areas. In rural areas elderly had contrasting views on their societal role as against their counterparts in urban areas.

Again, they differed on the problems and constraints of life. The findings also reflected on the different concerns in old age between sexes. For instance, the female elderly favoured co-residence with children, which they felt was the best security in old age. But the males seemed to differ on that count, for they felt that the younger generation would ignore their role Rural-urban differences in social relations are particularly critical for the elderly population because social interaction has been shown to be related to a variety of measures of adjustment and emotional wellbeing among older persons **(Larson, 1978 and Longino & Kart, 1892).** Several studies have indeed found higher levels of social integration among older rural residents than among their urban counterparts **(Lawton *et al.,* 1975 and Donnerworth *et al.,* 1978).**

Rural elders are stereotyped as having large and supportive friendship networks in contrast to stereotyped depictions of urban elders who rarely even know their neighbours **(Stoller and Lee, 1994).** Primary caregivers in rural areas are, in fact more likely to be spouse, but they are also more likely to provide care with fewer personal, financial and community resource when compared with urban caregivers **(Stone, 1991).**

There is a debate which shows that the elderly in traditional family were given respect and care but under modern society the elderly are seen to be in a vulnerable situation. Population research does not shown particular concern of the elderly due to small numbers. A micro level study found that the conditions among the elderly poor followed the deteriorating pattern of economic conditions. Rural-urban migration results in the abandonment of the elderly in rural areas. Those without close relatives and widows/widowers are the most in need of social supports. At present, most of the aged still live in joint families. Social changes are expected to reflect a decline in the high status given to the elderly in society. Researchers have recommended that Government address some problems of the elderly by establishment of health care units forthe aged in general hospitals country-wide **(Kabir, 1994).**

Mahajan (1992) expressed that the lower segments of society, the working generation is not able to extend social and economic support to the aged, not because they do not want but because they cannot afford to it.

It is this segment which becomes most vulnerable with increasing age. In Asian societies, the traditional norms and values laid stress on providing care and respect for the aged and elderly person. He owns the property, decides where and how to educate his children gets his children married when they grow; in fact, he brings under his umbrella his entire family, regardless of the age of the individual members and considers it his duty to direct, advice and guide till will the moment of his death **(Ramani, 2002).**

Although the traditional family values of respect and acceptance of responsibility for the elders still persist, the changing social and economic context due to modernisation and industrialisation have raised questions about the enduring role of the family as a source of support for its elderly**. (Fletcher and Stone, 1982**).

CHAPTER-III
RESEARCH METHODOLOGY

INTRODUCTION:

In this chapter the researcher has presented the details regarding the methodology used for the present study. Specific information relating to the various components of researcher design such as sampling tools of data collection, of the study.

TITIE OF THE STUDY:

A study on socio-economic conditions among the old age in varpattu village pudukottai district.

OBJECTIVES:
- The study in social condition.
- The study in economic condition.

Universe and sampling:

The universe and population of A study on socio-economic conditions among the old age in varpattu village pudukottai district the total respondents in 25 members.

RESEARCH DESIGN:

'A research design is the logical and systematic planning and directing a piece of research'

TOOLS OF DATA COLLECTION:

A self –prepared interview schedule was used to collection the data.

OPERATIONAL DEFINITION:

This operational definition is different from a verbal one so it is the foremost duty of the researcher defines the terms and concepts used in his study at the beginning of his work.

PRE-TEST:

The pre-test was conducted on 10 respondents in the study area .area information was collected from the respondents with the help of questionnaive.the result found to be satisfactory and hence the interview schedule, used for pre testing. Were also include in the final sample.

DATA COLLECTION:

Data was collected from the national rural employment guarantee programme in working people. Living in the rural area.Interviews for every respondent the time taken to collect was more then on hour.Awrage of data collection for day in 7 to 8 respondents, the collection data was done from 13.03.2021 to 19.3.2021, by visiting the people in varpattu village.

ANALYSIS OF DATA:

The Data Ware Analyzed by using computer. The data ware organized and transcribed before entering in to the computer.scorinf procedure was adopted tabulated keeping in view of the objectives of the study.approprite statistical techniques ware also adopted, the data were analyzed through computer.

STATISCIAL METHOD:

The research main using for the statistical method for statistical package for social science.

Limitation of the study:

The researcher collected the data only national rural employment guarantee programme working people. From the respondents hence the findings can be generalized only to the village president with varpattu panchayat.

CHAPTERIZATION:

- The first chapter deals with general information about the introduction
- The chapter second deals with the review of literature to the researcher
- The chapter three deals with Research methodology
- The chapter four deals with analysis the collection of data
- The chapter five deals with findings, suggestion, and conclusion

CHAPTER-IV

ANALYSIS AND INTERPRETATION

Table 1

Distribution of respondents according to Gender

S.NO	Gender	frequency	Percentage
1.	Male	13	52%
2.	Female	12	48%
	Total	**25**	**100%**

The above table shows that majority of the respondents gender is male (52 per cent). 48 percent of the respondent gender is female.

Table 2

Distribution of respondents according to Age

S.NO	AGE	Frequency	Percentage
1.	60-70	11	44
2.	71-80	12	48
3.	81-90	2	8
	Total	**25**	**100%**

The above table shows that majority of the respondents age group is 71-80 (48 per cent). 44 percent of the respondent age group is 60-70. 8 percent of the respondent lowest age group 81-90.

Table 3

Distribution of respondents according to Educational Qualification

S.NO	Educational Qualification	Frequency	Percentage
1.	Primary	5	20
2.	Secondary	2	8
3.	Higher secondary	00	00
4.	Degree	2	8
5.	Ill literature	16	64
	Total	**25**	**100%**

The above table shows that majority of the respondents educational qualification is ill literature (64 per cent). 20 percent of the respondent educational qualification primary level . 8 percent of the respondent educational qualification secondary level . 8 percent of the respondent educational qualification degree level .

Table 4

Distribution of respondents according to Maital status

S.NO	Marital status	Frequency	Percentage
1.	Single	0	0
2.	Married	25	100%
3.	Widowed	0	0
4.	Divorced	0	0
	Total	**25**	**100%**

The above table shows that majority of the respondents is married (100 per cent).

Table 5

Distribution of respondents according to Monthly Income

S.NO	Monthly Income	frequency	Percentage
1.	10000-20000	22	88%
2.	20000-30000	3	12%
	Total	**25**	**100%**

The above table shows that majority of the respondents monthly income (88 percent). 12 percent of the respondent lowest monthly income 20000-30000.

Table 6

Distribution of respondents according to Occupation

S.NO	Occupation	Frequency	Percentage
1.	Formar	12	48%
2.	Bussiness	1	4%
3.	Cooli	12	48%
	Total	**25**	**100%**

The above table shows that majority of the respondents occupation in formar (48 per cent). 48 percent of the respondents occupation in cooli . 4 percent of the respondents occupation in business .

Table 7

Distribution of respondents according to Children

S.NO	Children	frequency	Percentage
1.	Male	20	80
2.	Female	5	20
	Total	**25**	**100%**

The above table shows that majority of the respondents children male(80 per cent). 20 percent of the respondent children female.

Table 8

Distribution of respondents according to Number of Children

S.NO	Number of Children	Frequency	Percentage
1.	One	10	40%
2.	Two	7	28%
3.	Three and above	3	12%
4.	No Children	5	20%
	Total	**25**	**100%**

The above table shows that majority of the respondents number of children one (40 per cent). 28 percent of the respondent number of children two . 20 percent of the respondent no children . 12 percent of the respondent three and above .

Table 9

Distribution of respondents according to Own House

S.NO	Own House	Frequency	Percentage
1.	Yes	18	72%
2.	No	7	28%
	Total	**25**	**100%**

The above table shows that majority of the respondents own house yes (72 per cent). 28 percent of the respondent no own house .

Table 10

Distribution of respondents according to Type Of House

S.NO	Type of house	Frequency	Percentage
1.	Concrete house	11	44%
2.	Hut house	5	20%
3.	Tile house	2	8%
4.	No own House	7	28%
	Total	**25**	**100%**

The above table shows that majority of the respondents concrete house (44 per cent). 28 percent of the respondent is no own house . 20 percent of the respondent is hut house. 8 percent of the respondent is tile house .

Table 11

Distribution of respondents according to Staying

S.NO	Staying	Frequency	Percentage
1.	Rented house	3	12%
2.	Lease	4	16%
3.	Own house	18	72%
	Total	**25**	**100%**

The above table shows that majority of the respondents own house (72 per cent). 16 percent of the respondent is staying in lease . 12 percent of the respondent is staying in rented house .

Table 12

Distribution of respondents according to Toilet Facilities

S.NO	Toilet Facilities	Frequency	Percentage
1.	Yes	23	92%
2.	No	2	8%
	Total	**25**	**100%**

The above table shows that majority of the respondentst toilet facilities yes (92 per cent). 8 percent of the respondent no toilet facilities .

Table 13

Distribution of respondents according to Pension

S.NO	Pension	Frequency	Percentage
1.	Yes	15	60%
2.	No	10	40%
	Total	**25**	**100%**

The above table shows that majority of the respondents pension yes (60 per cent). 40 percent of the respondent no pension (40 per cent).

Table 14

Distribution of respondents according to kind of pension

S.NO	Kind of pension	Frequency	Percentage
1.	Old age pension	10	40%
2.	Retirement scheme	5	20%
3.	No pension	10	40%
	Total	**25**	**100%**

The above table shows that majority of the respondents kind of pension in old age pension (40 per cent).40 percent majority of the respondent in no pension . 20 percent of the respondents in retirement pension .

Table 15

Distribution of respondents according to Health problem

S.NO	Health problem	Frequency	Percentage
1.	Yes	15	60%
2.	No	10	40%
	Total	**25**	**100%**

The above table shows that majority of the respondents health problem yes (60per cent). 40 percent of the respondent health problem no .

Table 16

Distribution of respondents according to Isolated

S.NO	Isolated	Frequency	Percentage
1.	Yes	8	32%
2.	No	17	68%
	Total	**25**	**100%**

The above table shows that majority of the respondents isolated no (68 per cent). 32 percent of the respondents yes isolated

Table 17

Distribution of respondents according to their Agriculture Land

S.NO	Agriculture Land	Frequency	Percentage
1.	Yes	17	68%
2.	No	8	32%
	Total	**25**	**100%**

The above table shows that majority of the respondents agiculture land yes (68 per cent). 32 percent of the respondent agicultue land no .

Table 18

Distribution of respondents according to their Saving habit

S.NO	Saving habit	Frequency	Percentage
1.	Yes	18	72%
2.	No	7	28%
	Total	**25**	**100%**

The above table shows that majority of the respondents saving habit yes (72 per cent). 28 percent of the respondents no saving habit .

Table 19

Distribution of respondents according to their drinking water facilities

S.NO	drinking water facilities	Frequency	Percentage
1.	Yes	11	44%
2.	No	14	56%
	Total	**25**	**100%**

The above table shows that majority of the respondents drinking water facilities no (64 per cent). 20 percent of the respondent drinking water facilities yes.

CHAPTER-V

FINDINGS , SUGGESSTION AND CONCLUSION

FINDINGS

Gender

A majority of the respondent (52 per cent) of the ware male.

.

Gender

The findings of the study shows that majority of respondent (52 per cent) gender is male.

Age

The findings of the study shows that majority of respondent in the age grouop of 71-80 age

Educational qualification

The findings of the study shows that majority of respondent (64 per cent) educational qualification is ill literate .

Maital status

The findings of the study shows that majority of respondent (100 per cent) marital status is married.

Monthly income

The findings of the study shows that majority of respondent (88 per cent) monthly income is 10000-20000.

Occupation

The findings of the study shows that majority of respondent (48 per cent) occupation is formar and cooli .

Children

The findings of the study shows that majority of respondent (80 per cent) children is yes .

Own house

The findings of the study shows that majority of respondent (72 per cent) own house is yes.

Type of own house

The findings of the study shows that majority of respondent (44 per cent) type of own house is concrete house .

Toilet facilities

The findings of the study shows that majority of respondent (92 per cent) toilet facilities is yes .

Pension

The findings of the study shows that majority of respondent (60 per cent) pension is yes.

Which kind of pension

The findings of the study shows that majority of respondent (40 per cent) which kind of pension is old age pension.

Health problem

  The findings of the study shows that majority of respondent (60 per cent) health problem is yes .

Isolated

  The findings of the study shows that majority of respondent (68 per cent) isolated is no .

Agriculture land

  The findings of the study shows that majority of respondent (68 per cent) agiculture land is yes .

Saving habit

  The findings of the study shows that majority of respondent (72 per cent) saving habit is yes.

Dinking water facilities

  The findings of the study shows that majority of respondent (56 per cent) drinking water facilities is no.

SUGGESTION

1. There should be effective implementation of national programme for the Health Care for Elderly (NPHCE) by the government.

2. Efforts should be made by government and NGOs for creating awareness among old age people on various government schemes or programmes.

3. There should be establishment of day care centres by NGOs where the old age people can meet and mingle with their peers and spend their time in a socially meaningful manner.

4. There should be proper utilization of experiences and expertise of old age people for the welfare of the society, so that their negative attitude towards life can change in to positive attitude and this will help to reduce their feeling of dependence on the family members.

5.   There should be proper and effective implementation of national policy and programmes for old age people.

CONCLUSION

Old age is irreversible biological process. The problem of old age has been considered as a main social problem all over the world. In old age phase, people are required to face many socio economic and health problems, which they are not able to solve and have to suffer and thus becoming problematic issues for the society. It is concluded that existence of nuclear family system, and the impact of economic and social transformation have focused on the peculiar problems which the old age people are facing nowadays, and the duties or obligations of young generation towards the old age people is being eroded.

BIBLIOGRAPHY

- Aday, L.A., and Andersen, R. 1975. *Development of Indices of Access to Medical Care* . Ann Arbor, Mich.: Health Administration Press.

- Adler, G.S. 1982. Evaluation Options for Medicaid. Technical Appendix: Review of HCFA Data Sources. Urban Systems Research and Engineering, Inc., Cambridge, Mass. and Systemetrics, Inc., Lexington, Mass.

- Aloia, J.F., Cohn, S.H., Ostuni, J.A., Cane, R., and Ellis, K. 1978. Prevention of involutional bone loss by exercise. *Annals of Internal Medicine* 89:356–358. [PubMed]

- Andersen, P.K., and Borgan, O. 1984. Counting Process Models for Life History Data: A Review. Research Report 84/2, Statistical Research Unit, University of Copenhagen.

- Andersen, R.M., McCutcheon, A., Aday, L.A., Chiu, G.Y., and Bell, R. 1983. Exploring dimensions of access to medical care. *Health Service Research* 18(1):49–74. [PMC free article] [PubMed]

- Anderson, W.F. 1966. The prevention of illness in the elderly: The Rutherglen experiment in medicine in old age. *Proceedings of a Conference Held at the Royal College of Physicians* . London: Pitman.

- Andrews, F., and Withey, S.R. 1976. *Social Indicators of Well-being: Americans' Perceptions of Life Quality* . New York: Plenum Press.

- Bergner, M. 1985. Measurement of health status. *Medical Care* 23(5). [PubMed]

- Berkman, L.F. 1985. Maintenance of Health—Prevention of Disease: A Psychological Perspective. Paper prepared for Panel on Statistics for an Aging Population, Committee on National Statistics, National Research Council.

- Berkman, L.F., and Breslow, L. 1983. *Health and Ways of Living: The Alameda County Study* . New York: Oxford University Press.

- Berry, G. 1974. Longitudinal observations: Their usefulness and limitations with special reference to the forced expiratory volume. *Bulletin de Physiopathologie Respiratoire* 10:129–145. [PubMed]

- Besdine, R.W. 1982. The data base of geriatric medicine. Pp. 1–15 in J.W. Rowe, editor; and R.W. Besdine, editor. , eds., *Health and Disease in Old Age*. Boston: Little, Brown.

- 1983. The educational utility of comprehensive functional assessment in the elderly. *Journal of the American Geriatric Society* 31:651–656. [PubMed]

- 1984. Functional Assessment in the Elderly: Relationships Between Function and Diagnosis. Paper presented at the Fifth Annual Symposium on the Elderly and Their Health, Department of Epidemiology and Preventive Medicine, School of Medicine, University of Maryland.

- Bharadwaj, L.K., and Wilkening, E.A. 1977. The prediction of perceived well-being. *Social Indicators Research* 4:421–439.

- 1980. Life domain predictors of satisfaction with personal efficacy. *Human Relations* 33:165–181.

- Blanchet, M. 1986. Advances in Preventive Medicine. Paper presented at the Colloquium on Aging with Limited Health Resources, Economic Council of Canada, Winnipeg, Manitoba.

- Blendon, R.J. 1986. Health policy choices for the 1990s. *Issues in Science and Technology* 2(4):65–73.

- Branch, L.G., and Jette, A.M. 1982. A prospective study of long-term care institutionalization among the aged. *American Journal of Public Health* 72:1373–1379. [PMC free article] [PubMed]

- 1984. Personal health practice and mortality among the elderly. *American Journal of Public Health* 74:1126–1129. [PMC free article] [PubMed]

- Brody, E. 1981. Women in the middle. *The Gerontologist* 21(5):471–480. [PubMed]

- Brody, J.A. 1987. The best of times and the worst of times: Aging and dependency in the 21st century. Pp. 3–21 in S.F. Spicker, editor; , S.R. Ingman, editor; , and I.R. Lawson, editor. , eds., *Ethical Dimensions of Geriatric Care*. Boston: D. Reidel Publishing Co.

- Brook, R.H., and Lohr, K.N. 1985. Efficacy, effectiveness, variations and quality: Boundary-crossing research. *Medical Care* 23(5):710–722. [PubMed]

- Buckler, W., and Smith, C. 1980. The Continuous Work History Sample (CWHS): Description and contents. Pp. 165–174 in *Economic and Demographic Statistics*. Washington, D.C.: U.S. Department of Health and Human Services, Social Security Administration. .

- Busse, E.W., and Maddox, G.L. 1985. *Longitudinal Study of Normal Aging, 1955–1980 . An Overview of History, Design, and Findings* . New York: Springer Publishing Company.

- Campbell, A. *, Converse, P.E. *, *and* Rodgers, W.L. 1976. *The Quality of American Life* . New York: Russell Sage Foundation.

- Cook, N., and Ware, J.H. 1983. Design and analysis methods for longitudinal research. *Annual Review of Public Health* 4:1–23. [PubMed]

- Cornoni-Huntley, J., editor; , Brock, D.B., editor; , Ostfeld, A.M., editor; , Taylor, J.O., editor; , and Wallace, R.B., editor. , eds. 1986. Established Populations for Epidemiologic Studies of the Elderly: Resource Data Book. National Institute of Aging. NIH Publication #86-2443. Washington, D.C.: National Institutes of Health.

- Council of Professional Associations on Federal Statistics (COPAFS). 1986. *News from COPAFS* . No. 50. October. Council of Professional Associations on Federal Statistics, Washington, D.C.

- Cox, B., and Bonham, G. 1983. Sources and solutions for missing data in the NMCUES. Pp. 444–449 in *Proceedings of the Section of Survey Research Methods*. Washington, D.C.: American Statistical Association.

- Cox, L., Johnson, B., McDonald, S., Nelson, D., and Vazquez, V. 1985. Confidentiality issues at the Census Bureau. Pp. 199–218 in *Proceedings, First Annual Research Conference*. Washington, D.C.: U.S. Bureau of the Census.

- Cross, P.S., and Gurland, B.J. 1986. The Epidemiology of Dementing Disorders. Contract report prepared for the Office of Technology Assessment, U.S. Congress. Washington, D.C.: U.S. Government Printing Office.

- Crozier, D. 1985. DataWatch. *Health Affairs* 4(spring):114–128. [PubMed]

- Dalenius, T. 1986. The 1986 Invasion of Privacy Debate in Sweden. Unpublished report, Brown University.

QUESTONNAIRE

A STUDY ON SOCIO-ECONOMIC CONDITIONS AMONG THE OLD AGE IN

VARPATTU VILLAGE PUDUKOTTAI DISTRICT

SCHEDULE NO:

1. NAME_____

2. GENDER:

        A] MALE   B] FEMALE

3. AGE _____

4. EDUCATIONAL QUALIFICATION_____

5. MERITAL STATUS:

        A] SINGLE   B] MARRIED
        C] WIDOWED   D] DIVORCED

6. RELIGION_____

7. CASTE_____

8. MONTHLY INCOME_____

9. OCCUPATION_____

10. DO YOU HAVE CHILDREN?
        A] YES   B] NO

11. IF YES, HOW MANY CHILDREN YOU HAVE?
        A] ONE   B] TWO
        C] THREE AND ABOVE

12. DO YOU HAVE OWN HOUSE?
        A] YES   B] NO

13. IF YES, WHICH TYPE OF HOUSE?
        A] CONCRETER HOUSE   B] HUT HOUSE

        C] TILE HOUSE   D] OTHERS

14. IF NO, WHERE ARE YOU STAYING?
        A] RENTED HOUSE   B] LEASE   C] OTHERS
15. DO YOU HAVE TOILET FACILITIES IN YOUR HOME?
        A] YES   B] NO

16. HOW DO YOU PREPARE YOUR FOOD? (OFTEN)
        A] GAS STOVE   B] KEROSEN STOVE
        C] FIREWOOD   D] OTHERS

17. ARE YOU GETTING PENSION?
        A] YES   B] NO

18. IF YES, WICH KIND OF PENSION?
        A] OLD AGE PENSION   B] RETIREMENT SCHEME
        C] HANDICAPPED PENSION   D] OTHERS

19. DO YOU HAVE ANY HEALTH PROBLEM?
        A] YES   B] NO

20. DO YOU FEEL ISOLETED?
        A] YES   B] NO

21. WILL YOUR FAMILY ASK YOUR OPINION?

        A] YES   B] NO
22. WILL YOUR FAMILY ALLOWS YOU TO PARTICIPATE IN THE FAMILY ACTIVIES?
        A] YES   B] NO

23. ARE YOU PHYSICALLY CHALLENGED?
        A] YES   B] NO

24. IF YES, WHAT KIND OF DISABILITY?
        A] ORTHO   B] BLIND
        C] DEF AND DUMB   D] OTHERS

25. DO YOU HAVE AGICULTURE LAND?
        A] YES   B] NO

26.IF YES, HOW MUCH?
        A) BELOW 1 ACRE   B)1 TO 2 ACRES
        C)2 TO 3 ACRES   D)3 AND ABOVE

27. DO YOU HAVE SAVING HABIT?
        A] YES   B] NO

28. DOES YOUR HOME HAVE ELECTRICITY?
        A] YES   B] NO

29. DO YOU HAVE DRINKING WATER FACILITIES IN YOUR HOME?
        A] YES   B] NO

30. IF NO, FROM WHERE YOU WILL GET?
        A] PUBLIC TAP WATER   B] DRINKING WATER POND
        C] DRINKING WELL   D] OTHERS