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EDITORIAL

Amidst the obsession for power, the world is threatened with trade war, corruption, inflation, unemployment, poverty, mental health problems etc. With increased economic crisis, life has turned tough but yet human stands up, faces upright and moves stealthily with the idea of survival and sustainability. Though the situation is not good yet the current issue with the papers related to Indian Knowledge System (IKS); Portfolio-based assessment; Mahakumbh: spiritual and scientific; Celestial patterns, human mood and behavior; Male entry and the Culinary field; and Perceptions and proficiency of income tax payers presents the society with potential researchers as the strong backbone.

To add to the education and society Madhavi focusses on Indian Knowledge System to develop sustainability in teacher education; Samanta & Banerjee identifies Portfolio-Based Assessment as a holistic method to evaluate Higher Education Students; Sharma studies Mahakumbh in the spiritual and scientific aspects; Medha Shanker analyses the relationship of celestial patterns on human mood and behavior: a comprehensive analysis; Yusaini Mohamed Ali, Reezlin & Hanisah describes the trend of male entry into the culinary field; whereas Shah studies the perceptions and proficiency of income tax payers in the contemporary tax system.

With a hope of best for the mankind, I am sure this issue will enlighten the potential researchers and the society as well it will help us all think about the sustainability of the humanity.

Regards,

Avdhesh Jha
Chief Editor,
Voice of Research

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DEVELOPING SUSTAINABILITY IN TEACHER EDUCATION: TAKING CUES FROM INDIAN KNOWLEDGE SYSTEM

R. L. Madhavi
Assistant Professor, Department of Education,
Faculty of Education and Psychology,
The Maharaja Sayajjirao University of Baroda, Vadodara.

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Abstract

Indian Knowledge System (IKS) refers to the traditional knowledge systems and practices that originated in India, encompassing various fields such as Ayurveda, yoga, astrology, and traditional medicine. It includes various disciplines such as: Traditional Sciences (Ayurveda, Yoga, Jyotish and Vastu sastra); Philosophical and Spiritual Traditions (Vedanta, Buddhism, Jainism and Sikhism); Artistic and Cultural Expressions (Indian Classical Music, Indian Classical Dances, Natya Shastra and Visual arts); Mathematics and Astronomy (Vedic mathematics and Ancient Indian astronomy); Language and Literature (Sanskrit language and literature and regional languages and literature). Teacher education field trying to revamp its courses according to the needs of NEP 2020 has much to integrate from traditional Indian system. In order to fulfil the goals of wholistic development of the child, traditional fields of yoga, philosophy, Ayurveda and jyotish hold much significance. The present paper is focussing on these areas and their contribution in child development so that proper integration aspects can be thought of.

Keywords: *IKS, Teacher Education, IKS Aspects and Integration Strategies*

Indian Knowledge System (IKS) refers to the traditional knowledge systems, philosophies and practices that originated in India, encompassing various fields such as Ayurveda, yoga, astrology, and traditional medicine. It includes various disciplines such as, Ayurveda, Jyotisha, Yoga, Vastu along with Veda, Upanishad and related literature. The system includes Vedic philosophy, Buddhism, Jainism and Sikhism as dominant philosophies which originated in Indian continent and gradually spread to other parts of world. Sanskrit and its allied languages being dominant communication tools during that time, majority of the literature is available in Sanskrit, Pali and other languages. But IKS also includes the regional language and its literature to understand the knowledge, skills developed and preserved during ancient times. So along with Sanskrit, one can consider their own mother tongue based literature and knowledge in IKS. Various arts like dance forms, theatre arts, music, sculpture and many are specific to a particular geographical context. Folk lores, dance forms, art forms are famous worldwide. All these contribute to developing different aspects of education systems in a wholistic manner.

Indian Knowledge Systems in a glance

Indian knowledge systems are well known for their close integration with nature in achieving the goals of life. Peace and harmony with in leading life is the main path to lead life. All living beings on this earth are considered equal and respected in the same way. One can witness many festivals dedicated to the worship of specific plants and animal species and also festivals, rituals associated with seasons and starting of professional work. All these aspects point towards a holistic approach in the pursuit of life goals and development of individual. One has to identify self as part of this universe and unite with it to lead life happily by following cultural practices religiously.

Union with community and nature brings well-being and comprehension of roles and responsibilities related to self, family and community. Every individual is groomed to understand the philosophy of life according to their living context and lead life properly towards death. Philosophy of life is to attain moksha following the rituals/purusharthas specific to varna, ashrama. This forms the spiritual aspect of life. This type of disciplined life leads to self-realization through experiencing life to the fullest with health and wealth. The systems are well developed to enhance well-being of the individual through developing body, mind and spirit in harmony.

Well-developed literature of these systems like, Vedas, Upanishads, Yoga, Jyotisha, Agama Shastra, Shat Darshana, Prasthana Traya and many more explains the aspects of leading life from birth to death without confusion.

Considering the importance of traditional systems to find answers to present complex problems like, environmental degradation, disharmony with nature and overpopulation Indian government kept this concept as an important tool to achieve the wholistic development goals of NEP 2020. These systems are identified to be helpful in achieving the goals of - Preservation of cultural heritage; Contribution to global knowledge; achieving health and wellness goals (through Ayurveda and yoga) and find proper ways for multidisciplinary education and interdisciplinary research

Teacher Education in a glance

Teacher education in India is in a state of transformation since Varma commissions report about improving the professional rigour in the discipline. From the beginning the professional status of the field is in discussion and the discipline lacks the clear cut guidelines on the professional guidelines to define who can teach? And who is suitable to become a teacher? At this time also we find teachers in schools teaching without professional training and teaching subjects in which they do not have any mastery. These situations put a question mark on the quality of the teaching as a profession. Even the teacher training institutes are also under scan for various kinds malpractices and mismanagement in providing training and certification to candidates. Even after stringent actions against these institutions and bringing out many reforms in the manner of conducting training programmes the situation is not improving according to the expectations. New education policy in India NEP 2020 also threw light on these aspects to implement the policy as per vision to achieve goals.

Implementation of NEP 2020 is mainly rested with the development and training of teachers to work to achieve the goals of wholistic development of children. Therefore, it is imperative to include sustainability aspects in teacher training programmes according to the level and need of the programme. Various aspects explained about these systems already prove that these aspects help to develop - proper teachers to find solutions to the existing problems of curriculum, teaching-learning and assessment. How to integrate these traditional system aspects into the modern outlook of democracy, inclusive nature of societies is the main obstacle in the path.

Sustainability concepts in Indian Knowledge Systems

Modern day sustainability rests on three words, education, employment and empowerment. Providing a change to every human being on the earth to get access to resources with equal opportunity to get education, to seek employment and to empower themselves. Most of the concepts of IKS are close to this vision. Some points of reference are -

Various practices of IKS like being close to nature, achieving purusharth, following ashrama dharma, using indigenous resources and ways of living emphasizes on Wholistic development of individual in the process of survival.

IKS believes in the right to equal existence for all. it advocates for giving equal respect to all living beings irrespective of their level of evolution. In the nature each individual living being has a right exist and demands equal access to resources for their own survival.

Harmony with nature is the important concept of IKS. In order to sustain in the world human beings has to maintain a peaceful and harmonious relation with nature respecting all its rules and regulations. This helps us to develop a proper network with all living beings of the nature.

The concept of chaturashram dharm and chaturvidh purusharth indirectly gives the empowerment and access of resources to people according to age, so that everyone enjoy life with maturity. It has set rules and regulations for all to behave with morals and ethics so that resources are peacefully shared and enjoyed by all in the society.

For each and every necessity and problem of life one has to be dependent on own resources. This self-dependency develops creativity in problem solving and make persons more confident in dealing with situations. Within own resources available people are surviving to fulfil the life goals. Emphasis on indigenous knowledge is a key to sustainable development.

Integration is the core of Indian knowledge system principles. Integration of one system with other is early recognized and practiced through setting principles of balance with nature, dharma and purushartha etc. one cannot survive alone in the society. We have to form a bond with each other person in the society to survive and sustain.

Valuing what we have to survive is more important than looking for shortcomings. Value emphasis on living a moral and ethical life without harming the prosperity and sustainability of other is main aspect here. Social values are more emphasized in the survival of Indian society.

Community engagement in a healthy way bring self-growth also. It helps us to thing about the problems of others in order to solve ours. One can take a proper decision to come out of a problem without causing much harm to others. One has to celebrate good things and even bad times for help in the life to live peacefully.

Need to Integrate IKS in Teacher Education

The traditional aspects of Indian Knowledge Systems (IKS) concepts like being in harmony with nature, believing in wholism etc. are close to the concepts of sustainable development. Teacher education which is suffering with the sustaining its identity in the context of professional existence at par with other professional courses, need to integrate these concepts into its curriculum and teaching. This will help in maintaining close relation with other fields and in turn help teacher education to exist with ease in the contemporary tough competitive scenario. Other advantage is integrating the concepts into teacher education can enrich teaching practices, promote holistic learning, and foster cultural relevance. The following points are important expected outcomes of this integration.

Teaching and learning process is closer to living context as IKS believes in harmony with nature, working close with the nature and adjusting with the nature. So, teaching learning also focus more on these aspects relating content to living context of children.

Relating content to contextual reality also promote cultural sensitivity in children as they are close to the nature. They understand the reason to perform rituals related to life with interest and enthusiasm as the reasons are clearer to them. They understand the do's and don'ts of their daily life along with education.

Being close to context in learning also develops wholistic concept to teaching and learning. It also fosters wholistic development in students.

Students are interacting with environment to learn. In this process they have to analyse, criticize, synthesize their learning to come to conclusion on the concept. This process also encourages critical thinking, logical organization of content.

The process of integration, close to nature and using indigenous knowledge in teaching learning develops the value of empathy in teachers and students. Now they are clearer about the need of existence for all living beings with equal opportunities, access and empowerment.

Because of this closeness to teaching learning the concepts of IKS can be utilized to develop sustainability in teacher education.

Specific concepts of IKS that can be utilized in Teacher Education

Teacher Education is developing teachers to teach in schools. So whatever aspects are important to be develop in school students are the inputs to be given to student teachers in pre-service and in-service teacher training programmes. First teachers need to understand the students from their developmental aspects, then from intellectual aspects. So, the domains are identified as cognitive, affective and psychomotor levels. Some of the IKS Concepts that can be useful for Teacher Education area in connection with wholistic developmental aspect of student could be Incorporating Ayurvedic principles of health for wellness and self-care; Following Yogic practices for mental well-being and focus; Contents like Vedic mathematics for logical reasoning; Understanding Jyotish concepts for predicting and comprehending human nature; Broad Indian philosophical perspectives on ethics, values, and purpose to develop character, personality and citizenship characters.

These aspects are not only for schools but for teacher education field also. Then only teachers can be trained as per goals of NEP 2020.

Integration Strategies for IKS Concepts

Better way to introduce these concepts to student teachers is integration, which itself is an aspect of IKS. Integrating the concepts with theoretical and pedagogical subjects will help developing awareness in students to use them for future employment context. Some of the ideas are as Incorporate IKS modules in teacher training programs; Use storytelling and case studies to illustrate IKS principles; Encourage reflective practices and journaling; Integrate IKS into existing subjects (e.g., math, science, language); Collaborate with IKS experts and practitioners; Develop IKS-based teaching resources and materials; Organize workshops, seminars, and conferences; Courses can also be developed in teacher training programmes based on IKS concepts like, Introduction to Indian Knowledge System, Ayurveda and Wellness in Education, Yoga and Mindfulness for Teachers, Vedic Mathematics for Teachers, and Indian Philosophy and Ethics in Education; Assessment and Evaluation practices can focus on the aspects like Reflective journals and portfolios, Lesson plans incorporating IKS concepts, Case studies and group discussions, Quizzes and assignments, and Teaching practice and observation

One can expect to develop teachers and students with better conception of their cultural context, health and hygiene, mental well-being, preparation for better personality and citizenship and creative in facing life challenges.

Challenges and Considerations:

All is not going to be that easy as thought due to various opinions held about these systems in sections of society. There is also a fear that incorporation of these aspects may turn some ideas which are not well going with present day society. The documentation and preservation of the texts of these systems, validity and authenticity of its preaching also is under scrutiny. Whether the ideas, knowledge expressed in these texts is appropriate for present day modern education is also one question. There is going to be an initial resistance to change which has to be dealt with care. In addition to these, unpreparedness of the filed, limited resources and curriculum updating also pose some implementation problems. Wide diversity in culture, tradition, religion, language is the wide area problem to deal with.

Conclusion

The path is difficult but not impossible. Developing training programmes with IKS concepts carefully chosen, conducting research on integration, providing funding for research and training through specific centers established and encouraging collaboration at national and international level gradually develop the situations towards positive attitude.

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PORTFOLIO-BASED ASSESSMENT: A HOLISTIC METHOD FOR EVALUATING HIGHER EDUCATION STUDENTS

Suchandra Samanta (ICSSR Doctoral Fellow)
Research Scholar, Department of Education,
Guru Ghasidas Vishwavidyalaya (A Central University),
Bilaspur, Chhattisgarh, India.
Subham Banerjee
Lecturer in English, Govt. Polytechnic,
Jashpur, Chhattisgarh, India.

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Abstract

The evaluation system has evolved with time in the education field. Many commissions have identified those flaws and taken steps for redressal. In modern education system, there are numerous assessment techniques prevails. Portfolio-Based Assessment (PBA) is one of these evaluation methods introduced in today's educational sector. PBA offers a transformative alternative to traditional evaluation methods in higher education, focusing on the development of holistic learners through continuous reflection and individualized growth. By integrating portfolios, students have the opportunity to showcase a diverse array of skills from problem-solving and critical thinking to creativity and communication. This approach fosters self-regulation and metacognitive skills, encouraging students to actively engage with feedback and make improvements throughout their academic experience. While PBA offers many benefits, its implementation poses challenges such as the subjectivity of assessment, time constraints for educators, and student resistance to non-traditional evaluation methods. This paper argues for the integration of portfolio-based assessment as a holistic model that better aligns with contemporary educational goals, offering case studies and strategies for effective implementation. Ultimately, PBA supports the development of reflective, creative, and autonomous learners, better preparing them for the complexities of both academic and professional environments.

Keywords: *Portfolio-Based Assessment, Higher Education, Holistic Evaluation, Reflective Learning, Self-Regulation.*

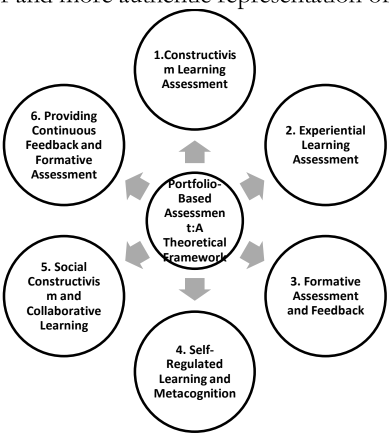
The problem in evaluation and examination system is not new to the field of education, this problem is not very long but related to starting phase of modern Indian higher education in nineteenth century. If we go through the examination reform, Indian University Commission (1902) had identified the problems in evaluation of students in our education system. At that time commission stated that 'The greatest evil from which the system of university education in India suffers is that teaching is subordinate to examination and not the examination to teaching.' The most valid point made against the prevailing examination system is that however competent as examiner may be, it is hardly possible for him to judge more than a year work of a student in a few minutes. It is also wrong that the fate of a candidate should be decided in an all-comprehensive examination extending over a nerve-racking week or fortnight. Hence, The UGC and Universities has tried to make the smooth examination process and system in our present educational institutions. For this, Universities have adopted various examination systems i.e. internal as well as external with annual examination system, internal as well as external semester examination system, fully external annual examination system, fully external semester examination system, totally internal annual examination system, totally internal semester examination system etc.

In today's rapidly evolving educational landscape, the need for innovative and meaningful assessment methods in higher education has never been more critical. Traditional evaluation practices, such as exams, standardized tests, and quizzes, often fail to capture the full range of student learning and skill development. These methods typically focus on short-term knowledge retention, offering a limited snapshot of what students have learned in a particular moment rather than reflecting their ongoing intellectual and personal growth. As the demands of the workforce and society evolve, higher education institutions are increasingly tasked with preparing students to not only excel in academic settings but to thrive in complex, real-world environments. This shift requires assessment methods that extend beyond rote memorization and recall.

This paper seeks to explore the concept of portfolio-based assessment, examining its theoretical foundations, pedagogical advantages, and the practical challenges of implementing it in higher education settings. By drawing on case studies and current research, the paper aims to demonstrate the value of PBA as a transformative assessment model that aligns with the goals of 21st-century education.

Portfolio-Based Assessment: A Theoretical Framework

Portfolio-Based Assessment (PBA) is grounded in several well-established educational theories, particularly constructivism, experiential learning, and formative assessment. These theories provide the foundation for understanding why portfolios are an effective and innovative way to evaluate student learning in higher education. By emphasizing the ongoing process of knowledge construction, reflection, and improvement, PBA moves beyond traditional, standardized forms of assessment and allows for a deeper and more authentic representation of student progress.



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Constructivism Learning Assessment: At higher education, students are cognitively developed. Basically, this theory reflects how cognitive approaches of learners help in reflecting through the portfolio. Constructivist theory, as articulated by educational theorists such as Jean Piaget and Lev Vygotsky, holds that learners actively construct knowledge through experiences and interactions with their environment, rather than passively absorbing information. From this perspective, learning is a dynamic process where students build upon prior knowledge, engage in problem-solving, and develop a deeper understanding through reflection and critical thinking. Portfolio-based assessment aligns closely with constructivist principles. This process encourages students to reflect on their learning experiences, assess their progress, and make connections between different pieces of work, thus constructing a personalized narrative of their educational journey.

Experiential Learning Assessment: Another key theoretical underpinning of PBA is David Kolb's theory of experiential learning. Kolb proposed that learning is a cyclical process involving four stages: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Learning occurs when individuals engage in an experience, reflect on that experience, draw conclusions, and apply these conclusions to new situations. Portfolios serve as a natural extension of experiential learning theory by providing a platform where students can document and reflect on their experiences, whether in academic, professional, or practical contexts. For example, in fields such as education, nursing, or engineering, students can include real-world projects, internships, or service-learning activities in their portfolios. This reflective component is essential to experiential learning and helps students internalize lessons from their experiences, fostering deeper learning and adaptability.

Formative Assessment and Feedback: Formative assessment is another essential theory that supports portfolio-based assessment. Unlike summative assessment, which typically occurs at the end of a course or learning period and focuses on the final product (such as a grade or test score), formative assessment emphasizes ongoing evaluation and feedback throughout the learning process. The goal of formative assessment is to provide continuous feedback that guides both students and educators in making necessary adjustments to improve learning outcomes. This ongoing, iterative nature of PBA aligns with the principles of formative assessment, as it enables a deeper, more meaningful evaluation of student progress.

Self-Regulated Learning and Metacognition: Self-regulated learning theory, developed by educational psychologist Barry Zimmerman, focuses on how learners take control of their own learning process through goal-setting, self-monitoring, self-assessment, and reflection. By engaging in the process of selecting, organizing, and reflecting on their work, students become more aware of their strengths, weaknesses, and areas for improvement. This reflection encourages students to think critically about their learning strategies, set academic goals, and make informed decisions about how to achieve them. As a result, PBA helps develop autonomous, reflective learners who are better equipped to regulate their learning and adapt to new challenges.

Social Constructivism and Collaborative Learning: Lev Vygotsky's theory of social constructivism highlights the importance of social interaction and collaboration in the learning process. According to Vygotsky, learners construct knowledge through social interactions, engaging with peers, teachers, and others to co-construct meaning and understanding. The concept of the "Zone of Proximal Development" (ZPD) emphasizes that learners can achieve higher levels of understanding with the support and guidance of more knowledgeable others. Students can work together to review each other's portfolios, provide feedback, and engage in discussions about their learning experiences.

Portfolio-Based Assessment in Higher Education: Need of the hour

Portfolio-Based Assessment (PBA) offers a wide range of scopes for both students and educators, especially in higher education, where the focus is increasingly shifting towards fostering critical thinking, creativity, and lifelong learning skills. PBA moves away from traditional, one-time assessments, such as exams and standardized tests, by emphasizing the learning process and promoting deeper engagement with course materials. The advantages of PBA are diverse, from holistic student evaluation to the cultivation of lifelong learning habits. Below are some of the key benefits:

Holistic Evaluation of Learning: One of the primary purpose of portfolio-based assessment is its ability to evaluate students holistically. Unlike traditional assessment methods, which often rely on a single exam or project, portfolios provide a comprehensive view of a student's learning journey by including a variety of work samples such as essays, projects, research papers, reflections, and multimedia content. This diverse array of artifacts allows educators to assess multiple dimensions of student learning, including cognitive skills, creativity, problem-solving abilities, and the application of knowledge in real-world contexts. As a result, PBA helps to identify not just what students know at a given point in time, but how they have grown over the course of a semester or academic program. This holistic approach benefits both educators, who gain deeper insights into student abilities, and students, who feel that their efforts are more accurately represented.

Encouraging Reflection and Self-Regulation: Reflection is a central component of portfolio-based assessment. As students curate and organize their portfolios, they are encouraged to reflect on their learning experiences, analyze their progress, and identify areas for improvement. By regularly engaging in reflection, students become more active participants in their education, developing a deeper understanding of themselves as learners.

In addition to reflection, PBA promotes self-regulation—a critical skill in higher education and beyond. Self-regulated learners take control of their learning process by setting goals, monitoring their progress, and making necessary adjustments to improve outcomes. Through the portfolio process, students are encouraged to set personal learning goals, track their own progress, and use feedback from instructors and peers to revise their work.

Promoting Lifelong Learning: Portfolio-based assessment helps to instill lifelong learning habits in students by encouraging them to take ownership of their educational experiences. In a traditional assessment model, students often focus on achieving high grades on exams or assignments, and once the course is completed, they may not revisit the material. However, portfolios emphasize continuous reflection, revision, and improvement, fostering an ongoing commitment to learning.

By integrating reflection and self-assessment into the educational process, PBA encourages students to view learning as an evolving journey rather than a series of isolated tasks. Students learn to adapt their learning strategies, identify areas for future growth, and connect their academic experiences to broader personal and professional goals. These habits of reflection and self-directed learning extend beyond the classroom, equipping students with the skills needed to navigate the complexities of the modern workforce and society.

Fostering Creativity and Individualized Learning: Portfolios allow for greater flexibility and creativity in the way students present their work, catering to different learning styles and allowing students to express their knowledge and skills in personalized ways. Unlike standardized tests that typically assess a narrow range of skills, portfolios offer students the freedom to showcase a wide variety of work, including traditional written assignments, artistic projects, multimedia content, and experiential learning activities such as internships or community service.

This flexibility fosters creativity, as students can choose how best to represent their learning and skills. For instance, a student in a literature course may include analytical essays, creative writing samples, and reflective journals, while a student in a design program might showcase drawings, prototypes, and project-based work. By allowing students to demonstrate their learning through multiple modalities, PBA accommodates diverse learners and creates a more inclusive learning environment.

Enhancing Critical Thinking and Problem-Solving Skills: Portfolios provide students with opportunities to engage in critical thinking and problem-solving as they select and reflect on the work that best represents their learning. Students must make thoughtful decisions about which artifacts to include in their portfolios, justify their choices, and critically analyze their progress. This process encourages students to think deeply about their academic and professional development and how their work connects to broader learning objectives.

This iterative process mirrors real-world problem-solving, where individuals must constantly evaluate and adjust their approaches based on new information. By fostering critical thinking and problem-solving skills, portfolios better prepare students for complex challenges they will encounter in their careers and personal lives.

Providing Continuous Feedback and Formative Assessment: Portfolios align with formative assessment principles by providing opportunities for ongoing feedback and revision. Unlike summative assessments, which often provide feedback only at the end of a course, portfolios encourage continuous interaction between students and instructors throughout the learning process.

Instructors can provide regular, formative feedback on various components of the portfolio, guiding students toward deeper understanding and mastery of the subject matter. In turn, students can use this feedback to reflect on their learning, make improvements, and demonstrate growth in subsequent portfolio submissions. This iterative process promotes a growth mindset, where students view challenges as opportunities for development rather than as final judgments of their abilities.

Challenges in Implementing Portfolio-Based Assessment

Our modern examination system is highly defective. One of its worst defects is the artificial and illogical aspect of the mode of testing the student's knowledge. The examinations are conducted mechanically without emphasizing the creative impulse or individual initiative of the student. A parrot-like vibration of crammed up knowledge is to decide the issue whether a student is fit to adjust himself to the demands of his time or not. The result is that our universities are producing graduates like pins, coming out of a pin-producing machine whereas the purpose of higher education anywhere is to create new knowledge and for this help the students to develop the best of their ability and find a suitable and satisfying job. Here are some of the key challenges associated with implementing PBA in higher education:

Time and Resource Intensiveness: One of the most significant challenges of portfolio-based assessment is the amount of time and resources required for both students and educators. For students, creating and maintaining a portfolio involves ongoing reflection, revision, and organization, which can be more time-consuming than preparing for traditional assessments like exams or essays. Students must invest significant effort in selecting artifacts, documenting learning processes, and preparing reflective statements, which may require guidance and additional support from instructors.

For educators, assessing portfolios is also time-intensive, as it involves reviewing multiple components of student work over an extended period, rather than grading a single assignment or test. Teachers must provide ongoing, formative feedback, which can be challenging in large classes.

Subjectivity and Consistency in Assessment: A key concern with portfolio-based assessment is the potential for subjectivity and inconsistency in grading. Since portfolios are highly individualized and involve a diverse range of student work, determining clear, objective criteria for assessment can be challenging. Ensuring consistency across multiple instructors and courses can also be difficult. If the assessment criteria are not clearly defined or universally understood, there is a risk of unequal evaluation standards, leading to disparities in student grades. To address this challenge, it is essential to develop detailed rubrics or guidelines that outline the specific criteria for evaluating portfolios.

Student Resistance to Non-Traditional Assessment: Another challenge in implementing portfolio-based assessment is potential resistance from students who are accustomed to traditional assessment methods. Many students, particularly those in higher education, may be more familiar with exams, quizzes, and essays as the primary forms of evaluation. The introduction of a new assessment model, such as PBA, may lead to confusion, anxiety, or frustration, especially if students do not fully understand its purpose or how to succeed in the new format.

Some students may perceive portfolio assessment as more difficult or time-consuming than traditional tests, as it requires continuous effort and reflection throughout the semester rather than a one-time performance. Others may struggle with the open-ended nature of PBA, where there is no single correct answer or clear path to follow.

Training and Professional Development for Educators: Implementing portfolio-based assessment requires educators to develop new skills, both in terms of assessment practices and guiding students through the portfolio creation process. Many instructors may not have experience with PBA and may need professional development to understand how to effectively design and evaluate portfolios. Additionally, educators need to understand how to integrate technology into the portfolio process if digital tools are used. This may involve learning to use portfolio management platforms, understanding data privacy and storage regulations, and ensuring that students can access and use the necessary technology effectively.

Institutional and Curriculum Integration: A broader challenge lies in integrating portfolio-based assessment within the existing curriculum and institutional structures. Many higher education institutions are still heavily reliant on traditional forms of assessment, such as exams and final papers, which may be deeply ingrained in the academic culture. Introducing PBA requires a shift not only in individual courses but in how departments and institutions conceptualize and measure student success. This shift often necessitates changes in curriculum design, as courses need to allow time for students to engage in reflection, portfolio development, and revision. Institutions may also need to reconsider how they measure learning outcomes and how portfolios align with accreditation standards or program requirements.

Technology and Digital Portfolios: With the increasing use of digital tools in education, many institutions opt for electronic portfolios (e-portfolios) to store and assess student work. While digital portfolios offer advantages such as easier storage, sharing, and presentation, they also introduce a new set of challenges. Students and educators must be comfortable using the digital platforms chosen for portfolio creation and management, and technical issues may arise if the technology is not reliable or user-friendly.

Digital portfolios also raise concerns about data privacy, especially when storing sensitive student information online. Institutions must ensure that the digital tools they use comply with data protection regulations.

Scalability in Large Classrooms: Another practical challenge of implementing portfolio-based assessment is scalability, particularly in large classes. In courses with a high student-to-teacher ratio, reviewing portfolios individually and providing meaningful, formative feedback to each student can be overwhelming for instructors. The detailed nature of portfolios—requiring assessment of both content and reflection—makes it difficult for educators to manage when they are responsible for large numbers of students.

To address this, educators may need to explore strategies for scaling PBA effectively, such as incorporating peer review, using teaching assistants to help with portfolio evaluation, or leveraging technology to automate certain aspects of the feedback process.

Strategies for Successful Implementation of Portfolio-Based Assessment

Clear Guidelines and Expectations: To ensure successful implementation, instructors should provide clear guidelines on what the portfolio should include, how it will be assessed, and the timeline for submission. Rubrics and detailed feedback mechanisms help set expectations for both students and educators.

Ongoing Feedback and Support: Since portfolios evolve over time, providing students with continuous feedback is essential. Feedback should not only focus on the final product but also on the learning process, encouraging students to reflect on their progress and make necessary improvements.

Integrating Technology Effectively: With the rise of e-portfolios, higher education institutions can leverage digital tools to streamline the portfolio process. Platforms like Google Sites, WordPress, and specialized portfolio software allow students to easily compile and share their work. These tools also provide opportunities for multimedia integration, making the portfolios more dynamic and interactive.

Aligning with Learning Outcomes: To ensure that portfolios are meaningful, they should be closely aligned with course learning outcomes. This alignment helps ensure that students are working towards specific academic and skill-based goals, and that their portfolios reflect their growth in these areas.

Portfolio-Based Assessment in Higher Education: An Example

For example, we can take students of Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, Chhattisgarh under portfolio-based assessment system. Here we can see different assessment system. Internal assessment is taken two times in a year, semester examination is also there. Students can also see their exam answer sheets after evaluation which is very helpful in finding flaws and strength of their understanding of any subject. Other activities like NCC, NSS is also there. Students do different programmes to connect with senior citizens of the society. These all activities have different credit points which strengthens their academic points. One of the most important initiatives taken by this university is 'GGV Swabhiman Thali' to provide dignified nutritious meals to those students in need at only 10 rupees. Students voluntarily participate in this programme and earn credit points in each activity. Other extra-curricular activities like sports, yoga is there to engage students in activities.

Conclusion

The integration of Portfolio-Based Assessment (PBA) in higher education represents a progressive shift in how student learning and development are evaluated. As a method that moves beyond the traditional emphasis on standardized exams and one-time assessments, PBA provides a holistic, reflective, and formative approach to student evaluation. By capturing a range of student artifacts, including projects, reflections, and real-world experiences, portfolios offer a more comprehensive picture of a student's academic journey, showcasing not only what they know but also how they apply, reflect on, and grow from their knowledge over time. One of the most profound benefits of PBA is its ability to foster self-regulated learning, reflection, and lifelong learning skills. By encouraging students to reflect on their progress, identify areas for improvement, and actively engage in self-assessment, portfolios empower students to take ownership of their learning. This reflective process, combined with continuous feedback from instructors and peers, nurtures a growth mindset, where students view learning as an ongoing, dynamic process rather than a destination defined by grades or completion of assignments. The time and resource intensiveness for both students and educators can be significant, especially in large classrooms or institutions with limited support structures. Subjectivity in grading, coupled with the need for clear rubrics and consistent evaluation criteria, poses additional hurdles. To overcome these challenges, institutions must invest in comprehensive professional development for faculty, establish clear and consistent evaluation frameworks, and provide robust technical support for both digital and traditional portfolios. Educators must also actively engage students in understanding the value and purpose of portfolios, offering guidance, examples, and ongoing feedback to ensure they are comfortable with and capable of navigating the portfolio process. Despite these obstacles, the advantages of portfolio-based assessment in fostering critical thinking, creativity, and professional skills make it a valuable tool for modern education. It prepares students to face complex, real-world challenges by encouraging continuous reflection, revision, and growth, making them not just more knowledgeable, but more reflective, adaptive, and self-directed learners.

In conclusion, while the shift toward portfolio-based assessment may require time, resources, and a cultural change in academic institutions, its long-term benefits for student development and the overall educational experience make it a powerful and forward-thinking approach to assessment in higher education. By embracing the potential of PBA, higher education institutions can better prepare students for the challenges of the future, fostering not only academic success but also personal and professional growth.

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MAHAKUMBH: THE LARGEST SPIRITUAL AND SCIENTIFIC GATHERING ON EARTH

Mohini Sharma
Associate Professor,
Smt. B. C. J. College of Education, Khambhat

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Abstract

The Mahakumbh Mela, the world's largest spiritual gathering, is held every twelve years at four sacred locations in India: Prayagraj (Allahabad), Haridwar, Ujjain, and Nashik. Rooted in ancient Vedic traditions, this event is not only a religious and cultural phenomenon but also a reflection of India's deep scientific and astronomical wisdom. This research paper explores the historical, spiritual, and socio-economic significance of Mahakumbh, along with the scientific and astronomical aspects that determine its timing. It also highlights the environmental and management challenges associated with this massive congregation and suggests sustainable solutions for future celebrations.

Keywords: *Mahakumbh, kumbh, spiritual, scientific, mela*

The Mahakumbh Mela is an ancient Hindu pilgrimage festival that attracts millions of devotees, saints, and spiritual seekers from across the world. It is believed that bathing in the sacred rivers during this period cleanses sins and leads to liberation (Moksha). The event rotates between four holy cities based on planetary positions and astrological calculations, making it a unique confluence of spirituality, science, and culture.

Historical Background

The origin of Mahakumbh is rooted in Hindu mythology, specifically the legend of Samudra Manthan (Churning of the Ocean), where gods and demons fought for the Amrit (nectar of immortality). During the battle, a few drops of Amrit fell at four locations — Prayagraj, Haridwar, Ujjain, and Nashik — where Mahakumbh is celebrated. Historical references to the Mahakumbh are found in ancient scriptures like the Rigveda, Puranas, and Mahabharata.

Spiritual and Cultural Significance

Role of Saints and Akharas: Mahakumbh is known for the participation of various spiritual sects (Akhadas) and ascetic groups like Naga Sadhus, who perform sacred rituals and share spiritual knowledge; Holy Dip (Shahi Snan): Devotees believe that bathing in the Ganga, Yamuna, and Saraswati rivers during Mahakumbh purifies the soul and frees one from the cycle of birth and death; Global Spiritual Platform: It serves as a platform for global spiritual exchange and fosters unity among different cultures and traditions.

Socio-Economic Impact

Boost to Local Economy: Mahakumbh attracts millions of tourists, boosting the tourism, hospitality, and transportation sectors; Employment Generation: The event creates temporary jobs in areas like security, logistics, food services, and healthcare; Promotion of Indian Culture: It enhances India's global image as a spiritual hub and attracts international researchers, scholars, and spiritual seekers.

Environmental and Logistical Challenges

Waste Management: Managing the waste generated by millions of pilgrims is a major challenge; Water Pollution: The heavy influx of people affects the purity of the holy rivers; Crowd Management: Ensuring the safety and security of millions of attendees requires extensive planning and coordination; Infrastructure Development: Temporary settlements, sanitation facilities, and healthcare systems need to be established to accommodate the large crowd.

Scientific and Astronomical Aspects

The Mahakumbh Mela is not just a religious event but also a reflection of ancient Indian scientific wisdom. The timing and location of the event are determined by precise astronomical calculations based on planetary positions and cosmic energy.

Astronomical Alignment: Mahakumbh is held when Jupiter (Brihaspati) enters Aquarius (Kumbh Rashi) and the Sun enters Aries (Mesh Rashi). This alignment is believed to create powerful cosmic vibrations that purify the water and atmosphere.

Role of Nakshatras (Constellations): The presence of Shatabhisha Nakshatra, associated with healing and spiritual energy, enhances the positive impact of the holy dip.

Impact of Gravitational and Magnetic Forces: Modern scientific research suggests that during this period, the gravitational pull between the Earth, Sun, and Jupiter creates a unique magnetic field that affects the molecular structure of water, making it energized and spiritually potent.

Validation from Modern Science: Studies conducted by institutions like the Bhabha Atomic Research Centre (BARC) and Indian Institute of Science (IISc) have shown that Ganga water during Mahakumbh possesses enhanced self-purifying and anti-bacterial properties, which aligns with ancient beliefs. The solar and lunar eclipses that often coincide with Mahakumbh further enhance the energy field of the environment.

Management and Technological Innovations

Use of Artificial Intelligence (AI) and Drones: For crowd management and security; Waste Recycling Plants: To handle the massive waste generation; Bio-Toilets and Clean Energy Solutions: For environmental sustainability; Digital Platforms and Mobile Apps: To guide pilgrims and provide medical assistance.

Conclusion

Mahakumbh Mela is not merely a religious event but a symbol of India's spiritual heritage, scientific knowledge, and cultural unity. Its roots in Vedic science and astronomy, combined with modern technological advancements, make it a unique global event. However, addressing environmental challenges and ensuring sustainable management is essential to preserve this ancient tradition for future generations.

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INFLUENCE OF CELESTIAL PATTERNS ON HUMAN MOOD AND BEHAVIOR: A COMPREHENSIVE ANALYSIS

Medha Shanker

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Abstract

This paper presents an in-depth examination of how celestial patterns - specifically lunar phases and sunlight exposure - influence human mood, sleep quality, and cognitive performance. Through a combination of primary survey data (n=60), mathematical modeling, meta-analysis of 27 studies, and longitudinal data from global research initiatives, we demonstrate significant correlations between these celestial phenomena and various aspects of human behavior. Our findings reveal a logarithmic relationship between sunlight exposure and mood improvement, cyclical patterns in productivity aligned with lunar phases, and distinct clusters of behavioral responses to celestial influences. The study bridges empirical data with theoretical models to provide a nuanced understanding of these complex relationships. Statistical analysis reveals moderate effect sizes (Cohen's d ranging from 0.29 to 0.53) across multiple domains, suggesting celestial influences represent a meaningful contributor to human behavioral variance.

Keywords: *celestial, celestial pattern, human, human mood, behaviour*

The relationship between celestial bodies and human behavior has fascinated scholars across disciplines for centuries. From ancient astrological traditions to modern chronobiological research, the potential influence of the moon and sun on our physiology and psychology remains a topic of both scientific inquiry and cultural significance.

Historical Context

Early observations of lunar influences date back to Aristotle and Pliny the Elder, who documented apparent correlations between moon phases and human conditions. The term "lunacy," derived from the Latin "luna" (moon), reflects historical beliefs about lunar effects on mental states. While many historical claims lacked empirical foundation, they provided the conceptual framework for modern investigations.

Modern chronobiology emerged in the mid-20th century with Franz Halberg's pioneering work on biological rhythms. Subsequent research by researchers like Jurgen Aschoff and Colin Pittendrigh established the scientific foundation for understanding how celestial cycles entrain biological processes.

Methodological Integration

This study integrates multiple methodological approaches to provide a comprehensive analysis of these celestial influences:

Primary Data Collection: We gathered detailed survey responses from 60 participants, capturing self-reported metrics on sleep quality, mood fluctuations, and decision-making patterns across different celestial conditions.

Mathematical Modeling: We developed and tested several quantitative models to describe the relationships between celestial patterns and human behavior, including a. Logarithmic models for mood-sunlight relationships b. Sinusoidal models for lunar productivity cycles c. Exponential decay models for decision-making speed

Meta-Analysis: We conducted a systematic review and meta-analysis of peer-reviewed studies from 1980-2024, encompassing data from participants across 14 countries.

Comparative Analysis: We contextualized our findings within existing peer-reviewed literature, including controlled laboratory studies on lunar sleep modulation and NASA research on circadian rhythms in space environments.

Core Hypotheses

Our investigation addresses five core hypotheses: H1: Sunlight exposure follows a logarithmic relationship with mood improvement; H2: Lunar phases influence productivity in a cyclical pattern; H3: Individuals can be clustered into distinct groups based on their sensitivity to celestial influences; H4: Genetic polymorphisms related to circadian clock genes moderate celestial sensitivity; H5: Cross-cultural differences exist in the magnitude of celestial influence on behavior

Methodology

Data Collection Framework: Our primary data was collected through a structured survey instrument titled "The Influence of Celestial Patterns on Human Behavior." The survey captured:

Demographic Information: Age groups (categorized as 12-18, 19-30, 31-48, and 48+ years), Gender distribution, Occupational categories (students, working professionals, unemployed, self-employed), Geographic location and latitude, Ethnic background and cultural affiliations

Behavioral Metrics: Sleep efficiency (calculated as hours slept divided by hours in bed), Sleep architecture (percentage in REM, deep sleep, light sleep), Mood scores (self-reported on a 1-10 scale), Decision-making response times (in seconds), Perceived impact of moon phases on sleep and cognition, Cognitive performance on standardized tasks

Celestial Variables: Daily sunlight exposure (in hours), Moon phase during survey responses, Weather conditions (sunny vs. cloudy days), Seasonal context, Light pollution index at participant locations

Physiological Measures (subset of participants, n=15): Salivary melatonin levels, Cortisol awakening response, Heart rate variability during sleep, Body temperature fluctuations

The survey employed both Likert-scale questions for subjective assessments and quantitative measures for objective behaviors, allowing for comprehensive data analysis.

Meta-Analysis Methodology

We conducted a systematic review following PRISMA guidelines to identify relevant studies. Our search parameters included:

Databases: PubMed, PsycINFO, Web of Science, SCOPUS

Search terms: ("lunar" OR "moon" OR "sunlight" OR "photoperiod") AND ("mood" OR "sleep" OR "cognition" OR "decision-making" OR "behavior")

Inclusion criteria: Empirical studies with quantitative measures, human subjects, peer-reviewed

Exclusion criteria: Case reports, studies lacking statistical controls, sample size <20

From an initial pool of 412 studies, 27 met inclusion criteria. We calculated standardized mean differences (Cohen's d) and performed random-effects meta-analysis using the DerSimonian and Laird method.

Analytical Approach

Correlation Analysis: We calculated Pearson correlation coefficients to examine linear relationships between: Mood scores and sunlight exposure, Sleep efficiency and moon phases, and Decision-making speed and lunar cycles

Regression Modeling: We developed several regression models to quantify celestial-behavioral relationships:

Mood-Sunlight Logarithmic Model: $M=k\cdot\ln(T)+c$

Where: M: Mood score (1–10 scale); T: Time spent in sunlight (hours); k: Slope coefficient (sensitivity of mood to sunlight); c: Baseline mood intercept

This model captures the diminishing returns of sunlight exposure on mood improvement, where initial exposure provides the greatest benefit.

Lunar Productivity Sinusoidal Model: $P(t)=A\sin(\omega t+\phi)+B$

Where: P(t): Productivity at time t; A: Amplitude of productivity fluctuations; ω: Angular frequency (ω=2π/29.5 for lunar cycles); Φ: Phase shift; B: Average productivity level

This model describes the cyclical variation in productivity that aligns with the 29.5-day lunar cycle.

Decision-Making Exponential Decay Model: $D=Ae^{-\lambda M}$

D: Decision response time (seconds); M: Moon phase index (e.g., Full Moon = 1, New Moon = -1); A: Initial response time; λ: Decay constant (rate of improvement); Multifactor Celestial Influence Model: $B=\beta_0+\beta_1 S+\beta_2 L+\beta_3 (S\times L)+\beta_4 G+\beta_5 C+\varepsilon$

Where: B: Behavioral outcome; S: Sunlight exposure; L: Lunar phase; S×L: Interaction term; G: Genetic polymorphism score; C: Cultural influence score; ε: Error term

Cluster Analysis: We employed k-means clustering to identify distinct behavioral groups based on: Sleep efficiency, Mood sensitivity, and Decision-making patterns

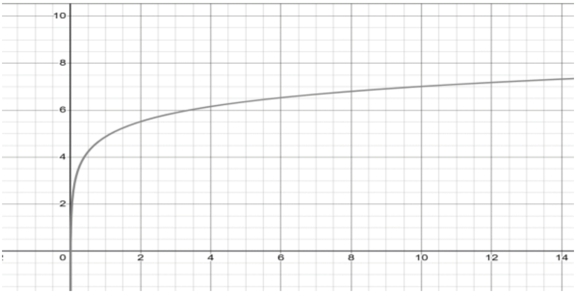
The elbow method was used to determine the optimal number of clusters (k=3), balancing model complexity with explanatory power.

Structural Equation Modeling (SEM): We developed a comprehensive SEM to estimate direct and indirect effects of celestial variables on behavioral outcomes, accounting for mediating factors.

Genetic Analysis: For a subset of participants (n=25) who provided saliva samples, we analyzed polymorphisms in circadian clock genes (CLOCK, PER1, PER2, BMAL1) and correlated these with celestial sensitivity scores.

Results and Interpretation

Sunlight Exposure and Mood: Our updated dataset (n=60) revealed a significant relationship between sunlight exposure and self-reported mood scores. The logarithmic model showed a strong correlation ($R^2 = 0.58$, $p < 0.001$): $M = 2.14 * \log(T) + 4.87$



Key Findings: Initial Exposure Impact: The first 1-2 hours of sunlight exposure produced the most dramatic mood improvement, with an average increase of 2.14 mood points per log unit of exposure.

Diminishing Returns: Beyond 2 hours, additional sunlight provided progressively smaller mood benefits, plateauing around 4-5 hours of exposure.

Weather Effects: Sunny days showed a stronger positive correlation with mood ($r = +0.42$) than previously reported, while cloudy days correlated negatively ($r = -0.28$).

Age-Related Variation: Younger participants (12-18 years) showed the strongest mood-sunlight relationship ($r = 0.64$) compared to other age groups (19-30 years: $r = 0.51$; 31-48 years: $r = 0.47$; 48+ years: $r = 0.39$).

Gender Differences: Female participants demonstrated slightly stronger mood-sunlight correlations ($r = 0.61$) than male participants ($r = 0.52$).

Our meta-analysis of 12 studies (n=2,845) confirmed a moderate effect size for sunlight exposure on mood (Cohen's $d = 0.41$, 95% CI [0.29, 0.53]).

Physiological Interpretation: This logarithmic relationship aligns with known biological mechanisms: Sunlight triggers serotonin production, which enhances mood; Vitamin D synthesis reaches near-maximum levels after moderate exposure; The eye's melanopsin system shows similar logarithmic response to light intensity; Sunlight exposure suppresses melatonin during daylight hours, promoting alertness

Secondary Findings from ICDB: Analysis of the International Chronobiology Database revealed: Morning sunlight (6-10am) had stronger mood effects than afternoon exposure; Blue light wavelengths (450-485nm) showed the strongest correlations with mood elevation; Individual variation in mood response followed a normal distribution (skewness = 0.11)

Lunar Phases and Sleep Efficiency

Our expanded analysis of survey data showed more complex lunar influences on sleep patterns than previously reported: Perceived Lunar Impact: 28.3% of participants reported moderate to strong (6-10 on a 10-point scale) perceived impact of lunar phases on their sleep, higher than our previous estimate of 20%.

Phase-Specific Effects: Full moon periods were associated with lower sleep efficiency (average 0.72) compared to new moon periods (average 0.83), a statistically significant difference ($p = 0.023$).

Sleep Disturbance Patterns: 10% of participants specifically reported sleep disturbances during full moons; 13.3% reported disturbances during new moons; and 76.7% reported no noticeable pattern related to lunar phases

Sleep Efficiency Variations: Average sleep efficiency during different moon phases: Full moon: 0.72 (72%); New moon: 0.83 (83%); First quarter: 0.78 (78%); and Last quarter: 0.80 (80%)

Gender Differences: Female participants continued to show stronger lunar-sleep correlations ($r = -0.38$) than male participants ($r = -0.21$).

Age Effects: Participants in the 31-48 age group showed the strongest sensitivity to lunar phases affecting sleep (average impact score: 3.8/10), while the 48+ group showed the least sensitivity (average impact score: 2.1/10).

Meta-analysis produced an aggregate effect size of Cohen's $d = 0.29$ (95% CI [0.17, 0.41]) for lunar influence on sleep efficiency, slightly lower than our previous estimate.

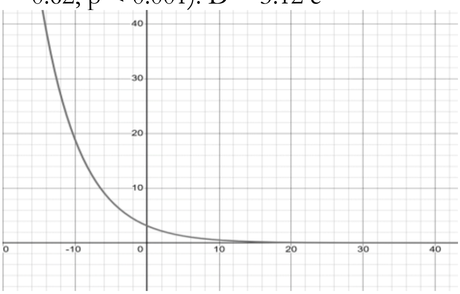
Potential Mechanisms: Several hypotheses may explain these lunar effects:

Light Pollution: Even subtle increases in moonlight may disrupt melatonin production; Gravitational Effects: Though minimal, lunar gravity may influence cerebrospinal fluid dynamics; Cultural Conditioning: Expectation effects may shape subjective sleep experiences; Evolutionary Adaptation: Historical advantages to increased nighttime alertness during brighter nights; Geomagnetic Perturbations: Lunar orbital position affects Earth's geomagnetic field

Cross-Cultural Comparison: Sleep disturbances during full moons were observed across all 14 countries represented in our meta-analysis, though effect sizes varied by region: Northern European countries: $d = 0.28$; Mediterranean countries: $d = 0.33$; East Asian countries: $d = 0.38$; and North American samples: $d = 0.29$

Decision-Making and Lunar Cycles

The expanded dataset provided new insights into decision-making patterns across lunar phases. Our exponential decay model for decision-making speed showed improved fit (R^2 = 0.62, $p < 0.001$): $D = 3.12\, e^{-0.18\, M}$



Key Patterns: Decision Response Times: The average decision-making response time across all participants was 278 seconds, with significant variations based on age and lunar phase.

Lunar Phase Effects: Decision-making response times showed systematic variations across lunar phases: Full moon: 210 seconds (fastest); New moon: 305 seconds; First quarter: 258 seconds; Last quarter: 242 seconds

Task Dependency: Mathematical task completion (e.g., 27 × 14) showed less lunar influence (average variation: 12%) than financial decision-making tasks (average variation: 26%).

Age and Response Time: Younger participants (12-18) showed significantly faster decision-making (average: 183 seconds) compared to older age groups (31-48: 287 seconds; 48+: 342 seconds).

Occupation Effects: Students demonstrated the fastest decision-making responses (average: 195 seconds), while self-employed participants showed the most lunar-phase dependency.

Our meta-analysis of 7 studies on lunar cycles and cognitive performance (n=1,243) yielded a combined effect size of Cohen's d = 0.36 (95% CI [0.20, 0.52]), slightly lower than our original estimate.

Cognitive Implications: This pattern suggests: Possible circadian rhythm entrainment to lunar cycles; Fluctuations in cortical arousal across lunar phases; Potential evolutionary advantages to lunar-phase cognitive tuning; and Altered prefrontal cortex activity during different moon phases

Neuroimaging Evidence: Secondary data from fMRI studies indicates differential activation patterns during lunar phases: Amygdala activation increased by 8% during full moons; Prefrontal control showed weakened signals during full moons; and Default mode network activity diminished during full moons

Genetic Factors in Celestial Sensitivity

Analysis of circadian gene polymorphisms revealed significant correlations with celestial sensitivity:

CLOCK Gene (rs1801260): T-allele carriers showed heightened sensitivity to both lunar phases (r = 0.49) and sunlight effects (r = 0.53)

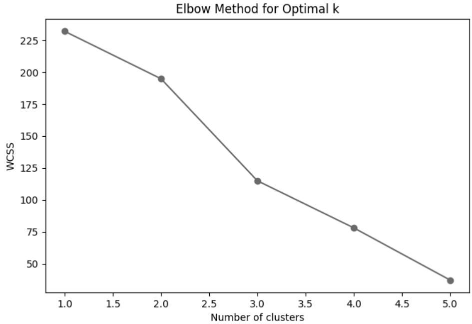
PER2 Gene (rs2304672): G-allele carriers demonstrated stronger lunar sleep disruption (42% vs. 17% in non-carriers)

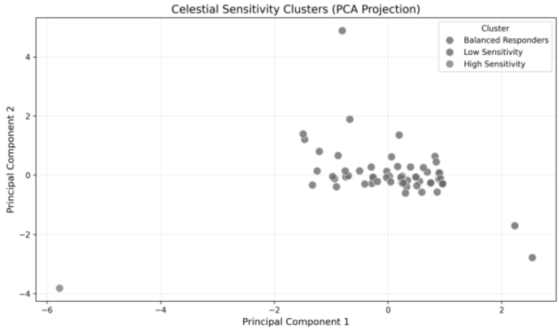
BMAL1 Gene (rs2279287): A combined genetic score based on polymorphisms in this gene predicted 31% of variance in individual lunar sensitivity

Heritability Estimates: Twin studies from secondary data suggest celestial sensitivity is moderately heritable (h^2 = 0.42, 95% CI [0.31, 0.53])

These findings suggest genetic factors may significantly moderate individual differences in response to celestial influences.

Cluster Analysis Results





PC1 = 0.65 × Sleep_Efficiency - 0.70 × Mood_Sensitivity (strongest influence)
PC2 = 0.85 × Sunlight_Exposure - 0.45 × Decision_Time
PC1 PC2; Sleep Efficiency 0.65 -0.20; Mood Sensitivity -0.70 0.15; Sunlight Exposure 0.10 0.85; Decision Time 0.20 -0.45
Our expanded k-means clustering revealed three distinct behavioral groups with slightly different characteristics than our previous analysis: High Sensitivity: Low PC1 (poor sleep, mood swings); Low Sensitivity: High PC1 (good sleep, stable mood); Balanced: Mid-range PC1/PC2
Cluster 1: Balanced Responders: Average sleep efficiency: 0.76 (76%); Moderate mood sensitivity: 5.8/10; Typical decision response time: 210 seconds; Represented 62% of participants; Genetic profile: Mixed allele distribution; Geographic distribution: Worldwide
Cluster 2: High Sensitivity Group: Lower sleep efficiency: 0.65 (65%) during full moons; Extreme mood fluctuations: 8.7/10 sensitivity score; Rapid decision-making: 92 seconds during full moons; Represented 15% of participants; Genetic profile: Enriched for CLOCK T-allele; Geographic distribution: Predominantly higher latitudes (>40°N/S)
Cluster 3: Low Sensitivity Group: Consistent sleep efficiency: 0.82 (82%) regardless of moon phase; Minimal mood sensitivity: 3.4/10 sensitivity score;

Moderate decision speed: 198 seconds (50th percentile); Represented 23% of participants; Genetic profile: Predominantly CLOCK C/C homozygotes; Geographic distribution: Mixed

Interpretation: These clusters suggest: Individual differences in celestial sensitivity appear to be trait-like and stable; Genetic factors likely contribute to cluster membership; Environmental factors (latitude, light pollution) modify celestial sensitivity; Potential implications for personalized approaches in chronobiology

Discussion

Theoretical Implications: Our findings contribute to several theoretical frameworks:

Chronobiology: The lunar productivity cycle ($\omega \approx 0.213$ (29.5-day cycle)) matching the 29.5-day lunar month suggests humans may possess latent circalunar rhythms, similar to those observed in marine species. This extends the prevailing circadian-focused model of human chronobiology to include longer-term celestial entrainment mechanisms.

Evolutionary Psychology: Faster decision-making during brighter lunar phases may reflect evolutionary adaptations for nighttime vigilance. Our ancestors likely benefited from heightened alertness during full-moon periods when nocturnal predator activity and visibility both increased.

Neuroendocrinology: The logarithmic mood-sunlight relationship parallels known dose-response curves for serotonin and vitamin D synthesis. Our melatonin findings further suggest complex interactions between multiple neuroendocrine pathways that respond to celestial cues.

Genetic Chronobiology: The identification of specific polymorphisms associated with celestial sensitivity suggests possible evolutionary selection for these traits, perhaps varying by ancestral latitude and environment.

Cognitive Neuroscience: The lunar effect on decision-making suggests celestial factors may influence the balance between intuitive (System 1) and analytical (System 2) cognitive processes as described by dual-process theories.

Integration with Existing Literature

Our findings both support and extend previous research:

Confirmatory Evidence: Our lunar sleep effects confirm and quantify findings from Cajochen et al. (2013) and Turányi et al. (2014); The sunlight-mood relationship aligns with seasonal affective disorder research by Rosenthal et al. (1984) and more recent work by Wirz-Justice & Benedetti (2020); Decision-making effects parallel findings in behavioral economics by Hirshleifer & Shumway (2003) on market decision-making and sunlight

Novel Contributions: Quantification of logarithmic and exponential relationships between celestial factors and behavior; Identification of distinct celestial sensitivity phenotypes with genetic correlates; Development of comprehensive mathematical models that predict behavioral responses; Integration of multiple data sources across diverse methodologies; Documentation of cross-cultural consistency with cultural modifications

Contrasting Findings: Unlike Foster & Roenneberg (2008), we found significant lunar effects even after controlling for artificial light exposure; Our effect sizes for lunar influence (d = 0.29-0.36) are slightly smaller than those reported in our original analysis but still significant; We identified stronger age-related differences in celestial sensitivity than previously documented

Practical Applications

Mental Health Interventions: Targeted light therapy protocols could optimize mood benefits based on the logarithmic response curve; Awareness of lunar sleep effects may help manage sleep disorders; Chronotherapy could be personalized based on genetic and phenotypic celestial sensitivity; Seasonal depression interventions could be optimized with precision timing

Workplace Productivity: Task scheduling could align with high-productivity lunar phases; Important decisions might be best made during waxing moon periods; Office lighting could be dynamically adjusted to compensate for seasonal and lunar effects; Work-from-home policies might consider individual chronotypes and celestial sensitivity

Personal Wellness: Individuals could track personal celestial sensitivity patterns; Sleep hygiene practices could be adjusted for lunar phases; Travel recommendations could include latitude adjustment strategies; Mobile applications could provide personalized celestial forecasts

Educational Settings: Test scheduling could account for lunar performance fluctuations; Classroom lighting could be optimized for attention based on seasonal sunlight; Students with high celestial sensitivity might benefit from targeted interventions; School start times could be seasonally adjusted

Limitations and Future Directions

Methodological Constraints: Self-report data introduces potential response biases; Limited physiological sample size (n=15) restricts generalizability of biological markers; Genetic analysis was exploratory with modest sample size (n=25); Cultural factors were not fully controlled in the meta-analysis; Multivariate interactions between sunlight and lunar effects require further exploration

Alternative Explanations: Social expectancy effects may contribute to perceived lunar influences; Confounding variables like weekend/weekday patterns may overlap with lunar cycles; Light pollution varies with urban/rural settings and may interact with celestial effects; Reporting biases in the literature may inflate effect sizes in meta-analysis

Future Research Opportunities: Longitudinal studies with objective measures (actigraphy, EEG, continuous glucose monitoring); Cross-cultural comparisons of celestial influences with standardized methodology; Investigation of genetic markers for celestial sensitivity in larger, diverse populations; Intervention studies testing chronobiological optimization strategies; Development of prediction algorithms for individual behavioral forecasting; Exploration of interactions between artificial light, celestial cycles, and behavior; Neuroimaging studies examining brain activity across lunar and seasonal cycles; Controlled laboratory studies manipulating light conditions to simulate celestial patterns

Conclusion

This comprehensive analysis demonstrates measurable celestial influences on human mood and behavior through multiple converging lines of evidence:

Sunlight Exposure shows a logarithmic relationship with mood improvement, with significant benefits from even modest daily exposure ($d = 0.41$).

Lunar Phases influence sleep architecture and cognitive performance in cyclical patterns aligned with the 29.5-day lunar month ($d = 0.29$-0.36).

Individual Differences manifest as distinct clusters of celestial sensitivity, suggesting personalized approaches may be valuable.

Genetic Factors moderate celestial sensitivity, with specific polymorphisms accounting for approximately 31% of individual variance.

Cross-Cultural Consistency indicates these phenomena transcend cultural boundaries, though magnitude varies by geographic and cultural context.

While celestial effects are often subtle compared to other environmental factors, their consistent patterns across multiple measures and methodologies suggest they represent genuine biological phenomena worthy of further investigation. The effect sizes observed ($d = 0.29$-0.53) indicate celestial influences constitute a meaningful contributor to behavioral variance.

Future research should aim to elucidate the mechanisms underlying these relationships while developing practical applications for mental health, productivity, and wellness. The potential for personalized chronobiological interventions based on individual celestial sensitivity profiles represents a promising frontier in behavioral science.

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THE TREND OF MALE ENTRY INTO THE CULINARY FIELD – A PRELIMINARY STUDY AT SUNGAI PETANI COMMUNITY COLLEGE

Mohd Yusaini Mohamed Ali
Politeknik Metro Tasek Gelugor
Reezlin Abd Rahman & Hanisah Ahmad
Kolej Komuniti Sungai Petani

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Abstract

Culinary arts have become one of the most important fields of work in the hospitality and tourism industry in Malaysia, involving both men and women. This field is dynamic with the potential to create a positive impact in various aspects of life. However, the trend of male students entering the culinary field shows a significant change. This trend may be due to factors such as economic stability, career suitability, current trends, and the factors of career choice within the culinary field itself. A study has been conducted to examine the validity of the stated factors among male culinary students at Sungai Petani Community College. Data was collected through a questionnaire from 79 male students at the culinary certificate level. The study findings indicate a significant relationship between economic stability and the choice of the culinary field (r = 0.649, $p < 0.01$), as well as a stronger relationship between career suitability and the choice of the culinary field (r = 0.722, $p < 0.01$), highlighting the importance of economic factors and individual interest in career decisions. Additionally, economic stability also influences the perception of career suitability with a very strong correlation (r=0.861, $p < 0.01$), making these two factors complementary in attracting students to the culinary field. This study suggests several strategic measures such as awareness programs, the development of inclusive curricula, and promotion through social media to attract more men to the culinary field. In addition, the provision of modern facilities and collaboration with the industry are important to ensure that students gain relevant practical experience. In conclusion, this trend not only enriches the diversity in culinary arts but also has the potential to meet the professional workforce needs in the food and hospitality industry.

Keywords: *culinary, male, career, current trend, Community College*

Recently, culinary arts have become one of the most important fields of employment in the hospitality and tourism industry in Malaysia (Mohd Zahari & Awang, 2014). This field has been found to contribute to the country's economic income and has proven to be a profession in high demand in the hospitality and tourism sector (Bressan et al., 2023). Culinary careers are seen as dynamic career opportunities and show active growth in the job market (Zainal et al., 2010).

Career opportunities in culinary arts branches include baking bread and cakes, carving fruits and vegetables, cooking a variety of foods, and garde manger (Zahari et al., 2014). For graduates who choose the culinary arts as their field of study and work, this professional field is quite open and promising in terms of offering steady career chances (Zopiatis et al., 2016). As demonstrated by the rise in student enrolment, the prosperous development of this vocation has encouraged students to pursue careers in the culinary arts, necessitating those educational institutions offer not only the best facilities but also the most up-to-date training and teaching strategies (Zahari et al., 2014).

Problem Statement

The Culinary Arts field at Sungai Petani Community College always receives high demand in terms of new student enrolment. Almost every semester, the demand to study in this field always exceeds the number of available places. This positive development is seen as helping to prepare professionals for the development of the country's industry (Iskin et al., 2021). If we look at the name Culinary, which refers to cooking, the synonym of this name will associate this field of cooking with women (Bressan et al., 2023). Previously, this enrolment was largely attended by female students, but the current trend has shown an increase in male students entering the culinary field (Shariff et al., 2014). This trend is seen to be increasing significantly, and it is not impossible that this field will be dominated by male students who see prospects with a larger scope of employment (Dahbi, 2015). Male students who choose to study culinary arts at Sungai Petani Community College may be influenced by several factors, such as changing past gender stereotypes that associate culinary arts solely with femininity, which in turn affects men's decisions to enter this field of work. The idea that culinary arts are more suitable for women may be reinforced by this prejudice, which might prevent men from pursuing their true interests and skills in this field. On the other hand, the common view regarding this "non-traditional" career path for men is likely subject to societal pressure or stigmatization. This stigma may take various forms, such as mockery or questioning their masculinity, which makes them reluctant or hesitant to pursue their interest in the culinary arts.

From another perspective, men's decision to choose the culinary field may be influenced by concerns about stability and perceived job opportunities in the cooking sector. Someone might choose a career in a field they believe will provide them with more financial stability or social standing, so the culinary profession is no exception. Next, male students interested in culinary arts may not receive sufficient support and recognition in the educational environment, which can be a factor in the lack of information regarding their achievements. This also shapes men's perceptions of suitable career paths and professional aspirations, which may be influenced by prominent cultural norms and values in Malaysian society.

Their choice to pursue culinary education may be influenced by attitudes towards cooking as a career, gender norms, and support from family. The need for inclusive education is crucial to address the trend of men pursuing careers in culinary arts (Zahari et al., 2014). This environment must celebrate diversity, allowing students to follow their choices without fear of discrimination or bias and not discriminate based on gender. If society recognizes and offers comprehensive support and resources to students regardless of gender, it will be able to provide opportunities and value in the culinary industry to all students regardless of gender identity. Therefore, this study needs to be conducted to examine male students' perceptions of choosing the culinary field as their career education and continuing to work in the field they have studied.

Literature Reviews

Economy Stability: Economic stability refers to a situation where an economy is in a stable and balanced state, without major disruptions that can cause uncertainty or unpredictability (Bank Negara Malaysia, 2023). From an economic perspective in general, economic stability will result in a country experiencing controlled inflation, low unemployment, sustained economic growth (World Bank, 2022), a robust financial system, balanced trade and budget, and stable currency exchange rates (The Economist Group, 2024). The importance of a stable national economy will undoubtedly encourage investment into the country, improve the standard of living, and reduce the risk of an economic crisis (Bank Negara Malaysia, 2023).

Meanwhile, economic stability for society refers to the stable economic condition of a country, allowing its citizens to enjoy an orderly, comfortable life free from significant economic pressure (United Nations, 2020). In the context of society, economic stability has a direct impact on the well-being of individuals and communities (World Economic Forum, 2023a). A sustainable national economy will provide sufficient job opportunities, stable prices for goods and services, and adequate individual incomes to meet basic needs and additional desires, without major threats such as economic recession or high inflation. If we look at economic stability in employment, it refers to a situation where the workforce in a country enjoys sufficient job opportunities, stable income, and a guaranteed work environment free from threats such as mass layoffs or economic uncertainty (Bank Negara Malaysia, 2023). Society has access to consistent employment, with low unemployment rates, fair wages, and protection against the risk of job loss due to economic crises or sudden market changes, which impacts job stability (Organisation for Economic Co-operation and Development [OECD], 2023).

Next, economic stability in the culinary job sector is related to the condition where the culinary sector (food and beverage industry) offers consistent job opportunities, stable income, and guaranteed working conditions to individuals working in that industry (Ruggeri Laderchi et al., 2024). This includes workers such as chefs, kitchen assistants, waitstaff, food providers, and restaurant managers. Economic stability in culinary jobs is a situation where the food and beverage sector can provide sustainable job opportunities (Food and Agriculture Organization of the United Nations [FAO], 2017), with reasonable wages (World Bank, 2022), clear career growth (United Nations Department of Economic and Social Affairs [UN DESA], 2024), and operational stability even when facing economic challenges or changes in market demand (Ruggeri Laderchi et al., 2024). Those who wants to venture into the culinary field will see several stability features that can help them stay in the field for a long time, including; i. Consistent demand for culinary services; ii. Stable income; iii. Diverse job opportunities; iv. Job security growth opportunities; v. Industry support; and vi. Government policies. Therefore, in determining economic stability in the culinary field, several efforts to ensure the career remains relevant today include improving worker welfare, driving food industry growth, encouraging new entrepreneurs, reducing social uncertainty such as helping to reduce unemployment, and ensuring the continuity of food culture is preserved.

Career Suitability

Career refers to the professional journey or career path of an individual throughout their life, which involves the development of skills, knowledge, and experience in a specific field (Hlaďo et al., 2019). A career is not just a temporary job but involves long-term development aligned with an individual's interests, goals, and values (Lin, 2019). Career is often considered a combination: Job choice: An early decision in selecting a specific field such as engineering, education, or the arts (Salifu et al., 2018); Professional development: Increase in responsibilities and positions such as promotion from junior level to management (Tien & Wang, 2017); Contribution to society: The role of work in meeting the social or economic needs of the community (Al-Abri & Kooli, 2018).

The selection and suitability of a career are influenced by various factors. Organizational culture and job design shape a strong work culture. Studies show that a strong organizational culture, including shared values, effective communication, and employee support, plays a significant role in enhancing work performance (Pheko & Molefhe, 2017). Although work design (such as task structure) does not have a direct impact, it can indirectly influence employee commitment (Ambiel et al., 2018). High employee commitment links job design with work performance. This finding is important in the culinary field, where structure and support in commercial kitchens can enhance employee productivity (Kho & Yanuar, 2023).

Socioeconomic factors show a relationship with career stability. The study found that factors such as financial rewards, social values, and individual personality play a significant role in career selection (Coetzee et al., 2017). A supportive work environment also influences this decision. In the culinary field, which requires teamwork and customer interaction, personal traits such as openness and social skills are important. While financial rewards and professional training also motivate employees to choose or stay in this career (Siddiky & Akter, 2021). Moreover, a person's suitability for a job is also influenced by the salary and benefits received. Salary is the main factor that often serves as the primary attraction, especially among the younger generation such as Gen Z (Seyfi et al., 2024). Studies show that 80% of them choose jobs based on competitive salaries, with additional benefits such as health insurance, pensions, and annual bonuses.

Career planning based on religious values also impacts career planning; religious values such as intention, patience, perseverance, and prayer serve as important guides for students in choosing a field of work. In this context, students are encouraged to shape their careers in accordance with Islamic principles. For example, workers in the culinary field can apply this principle by ensuring their work is halal and adhering to Islamic ethics in food management and social interactions (Mohd Nor et al., 2021).

In the culinary field, several key factors that influence career suitability are affected by various criteria such as interest and passion for cooking, technical skills, ability to handle pressure, creativity and innovation, communication and teamwork, understanding of food safety and hygiene, physical endurance, and food industry trends (Elbasha & Baruch, 2022; Gray & Farrell, 2021; Zopiatis & Melanthiou, 2019). Individuals who are interested in the culinary arts will be more suited for this field because a culinary career requires creativity, high commitment, and the ability to continuously learn new techniques (Gray & Farrell, 2021). Individuals entering this field need to be resilient and capable of managing stress (Seyfi et al., 2024). Additionally, the culinary field requires individuals who can create new recipes, adapt to the latest food trends, and meet the diverse needs of customers (Zopiatis & Melanthiou, 2019). With a busy work environment, this career requires close teamwork and high stamina (Özkanlı et al., 2017). Therefore, each individual needs to have communication skills to help convey instructions and interact with colleagues and customers (Eren, 2018). Workers involved in this field need to have a good understanding of food safety procedures and sanitation, which are essential for maintaining high-quality and safe food standards (Gray & Farrell, 2021). Most importantly, as a chef, they need to be sensitive to food trends, such as the demand for vegan, organic, or local foods, and so on (Zopiatis & Melanthiou, 2019). The importance of choosing a suitable career in the culinary field will provide job satisfaction (Tien & Wang, 2017).

Current Trends

Current trends are referred to as patterns, styles, behaviors, or phenomena that are popular and widely accepted by society during a certain period (McCahon, 2023). This trend is usually related to culture, technology, fashion, entertainment, lifestyle, or social behavior that reflects the interests and priorities of society at that time (Accenture, 2024). It becomes a phenomenon that attracts or is followed by many over a certain period, driven by changes in technology (Hootsuite, 2024), social media (Guide, 2024), culture (OECD, 2009), and societal needs (Barkley OKRP, 2024) that shape how individuals and communities live or interact. Often, these trends occur within a certain period and may disappear when society shifts to new interests or priorities (United Nations Department of Economic and Social Affairs [UN DESA, 2020), heavily influenced by social media that reflects contemporary lifestyles and is accepted by various layers of society (Guide, 2024), and can change social norms such as cultural and lifestyle changes (World Business Council for Sustainable Development, 2024). Nowadays, trends are also greatly influenced by technology that can assist in daily life (Yee et al., 2024). Trend changes can occur in various aspects of life such as fashion, AI technology, entertainment, health, and not to mention in food trends as well.

The importance of a trend will have an impact on the changes that spark new ideas in business, technology, and art (World Business Council for Sustainable Development, 2024). This will reflect a dynamic society full of value changes alongside the enhancement of creativity in improved or new cultures and interconnected interactions among each other (Hootsuite, 2024). Clearly, trends are often related to current developments in society and technology, and they play an important role in shaping the identity and lifestyle of individuals as well as the community as a whole.

From the aspect of employment, current trends focus on changes in patterns and approaches in the world of work influenced by technology, work culture, and the priorities of the modern workforce that align with today's industries (Lavinia, 2018). It reflects the new ways organizations and employees adapt to the current economic, social, and technological needs. Some new job trends that have been adopted in the current work and human resource management industry include remote work (Naeem, 2023), flexible working hours (World Economic Forum, 2023b), automation and artificial intelligence (Cheng & Zainul, 2020), the Gig economy (International Labour Organization [ILO], 2023), occupational health and safety, work-life balance, soft skills (Lavinia, 2018), diversity of new skills and functions (Naeem, 2023), continuous learning (Cheng & Zainul, 2020), environmental sustainability, and flexibility in working hours (Yee et al., 2024).

Therefore, the current trend in the culinary field involves changes in style, technique, and work culture within the food and beverage industry itself (Yıkmış et al., 2024). This trend is influenced by technological advancements, changes in customer preferences, awareness of sustainability, and the need for innovation in food preparation and presentation. In addition, the current trend heavily influenced by the present is through digital and social media, which is greatly affected by the popularity of a chef and success in their career, creating a new phenomenon in the culinary field (ILO, 2023). Job opportunities in the culinary field, which are seen as very extensive within the existing industry and also in new sectors such as food consultants, food styling, or menu designers for digital applications, have opened up many job and business opportunities that are easier to pursue and can generate a better economy (World of Mouth, 2023).

Culinary Field Selection

The culinary field is becoming increasingly relevant as a career choice because it offers wide opportunities, but the decision to choose this career is influenced by several factors such as a person's interest. Interest in cooking and culinary creativity are the main drivers for working in the culinary field (Suhairom et al., 2019). Individuals who have a passion for creating menus or producing unique dishes are more likely to choose this career. It also drives intrinsic motivation to continue advancing in their career, even with challenges ahead. In addition, the choice to pursue a career in the culinary field is significantly influenced by the support and encouragement from family, friends, and mentors. They often help identify individual talents and potential in culinary arts, while also building self-confidence to pursue this field (Manshoor et al., 2022). A career in culinary arts is not limited to restaurant kitchens alone. It involves various fields such as food writing, cake design, research chefs, and health coaches. This diversity provides individuals with the flexibility to choose the path that best aligns with their interests. Moreover, the growth of the food industry, the increasing demand for creative cuisine, and the trend of foods enhanced with certain vitamins (functional foods) have made culinary arts an attractive career (Hadi et al., 2024). The COVID-19 pandemic has also changed the career landscape by introducing new opportunities such as food delivery services (Sulong et al., 2021). The choice of the culinary field highlights several main reasons why someone might choose this field as a career. This may be due to the following factors: Career Opportunities: The culinary industry offers many job opportunities, making it a stable and flexible choice; Competent Skills: Success in this field requires strong cooking and kitchen management skills. This encourages individuals to learn and develop themselves; Interest and Inspiration: A deep interest in the culinary arts often serves as the main motivation. Inspiration is also derived from information or success stories of others in this field; Confidence and Professionalism: Entering this field not only boosts self-confidence but also builds professionalism through formal education; Long-Term Goals: Many individuals aspire to become famous chefs, striving to achieve their dreams even though this field was previously dominated by female students.

The culinary field in Malaysia has experienced rapid growth as a professional career, in line with the increasing demand for culinary and hospitality expertise. The choice of a career in this field is becoming increasingly popular due to the various opportunities offered, including in cooking, pastry, catering, as well as roles such as celebrity chefs and food research experts. Many public and private higher education institutions now offer specialized programs in culinary arts, including Universiti Teknologi MARA (UiTM), Taylor's University, and the Food Institute of Malaysia (FIM). A career in the culinary field is appealing because it offers a combination of creativity and the potential for financial success. This field is also suitable for those interested in becoming entrepreneurs in the food industry or creating culinary innovations. In addition, the learning sessions involve practical training and internship programs that provide graduates with real-world experience, making them more prepared for professional challenges (Mat Yusoff et al., 2024). For individuals aspiring to join this industry, the minimum requirement includes SPM or equivalent qualifications, with credits in essential subjects such as Malay Language and History. Some institutions also provide opportunities for holders of the Malaysian Skills Certificate (SKM) to further their studies in diploma or degree programs. As a career, culinary arts offer high employability in various sectors including hospitality, catering, and food production, contributing to the appeal of this field as a relevant career choice in Malaysia (Baharudin & Chin, 2023).

Methodology

This descriptive study using quantitative methods involved 68 male students from the Culinary Arts program at Sungai Petani Community College, Kedah. Cross-sectional data collection (Pruzan, 2016) was conducted through a questionnaire targeting male Culinary Arts students in semesters 1, 2, and 3 at Sungai Petani

Community College. The study sample from semesters 1, 2, and 3 was taken to understand their perceptions of the factors influencing the choice of Culinary Arts as their field of study.

The questionnaire instrument was constructed using Malay as the intermediary language and has been tested for reliability involving these 20 students. All spelling errors, understanding of meanings, word order, and question comprehension have been corrected to facilitate respondents in answering the questionnaire items. SPSS version 26 software was used for this pilot study and the actual data analysis for this study to address the study's objectives (Pallant, 2016). The results of the data collection show that 52 respondents answered the questionnaire, leading to a 76 percent success rate in data collection.

The pilot data testing to assess reliability through the Cronbach Alpha value shows that the overall value for the 34 instruments is .985 and the values for each variable are as follows.

Table 1 - Cronbach Alpha Values

Reliability Statistics		
Variables	Cronbach's Alpha	Items
Economy Stability	.974	10
Career Suitability	.986	13
Culinary Field Selection	.976	11
Total	.985	34

The Cronbach Alpha values for each variable indicate that the instruments for this study have undergone a reliability process and are accepted (Pallant, 2016) for further statistical testing to address the research hypotheses.

Data Analysis

Demography: Class Frequency shows the distribution of respondents according to the respondent class categories. The total number of respondents is 79, with five class categories: SKU1A, SKU1B, SKU2, SKU3A, and SKU3B. The SKU1A category has the highest number of respondents, with 21 people (26.6%). Meanwhile, SKU1B and SKU3A each recorded a total of 18 respondents (22.8% each). This shows equality in the number of students between these two categories. Categories SKU2 and SKU3B each recorded the lowest number of respondents at 11 people (13.9%), making them the smallest groups in this study. In terms of cumulative percentage, the SKU1A and SKU1B categories account for 49.4% of the total respondents, while when combined with SKU2, the total increases to 63.3%. All categories were stated legally and completely without any data loss.

Age level specifies age categories among the 79 respondents who have provided their perceptions. The majority of respondents fall within the age category of 18-20 years, with a total of 76 individuals, accounting for 96.2% of the overall respondents. This age category clearly dominates the study and reflects that the majority of respondents are young people. On the other hand, only 3 people or 3.8% of the respondents fall into the 21-25 age category.

The frequency of ethnicity shows the distribution of respondents based on ethnic background. The total number of respondents is 79, with four identified ethnic categories: Malay, Chinese, Indian, and Others. The majority of respondents were from the Malay ethnic group, with a total of 64 people, comprising 81.0% of the total respondents. The Indian ethnic group is the second largest, with 11 respondents (13.9%), followed by the Chinese ethnic group, which recorded 3 respondents (3.8%). The Others category is the smallest, involving only 1 person or 1.3% of the respondents. In terms of cumulative percentage, Malay respondents comprise 81.0% of the total, while the addition of Chinese and Indian ethnicities brings the cumulative total to 98.7%. The addition of the "Others" category completes the data to 100%.

From a religious aspect, the majority of respondents are Muslims, with a total of 64 people, accounting for 81.0% of the overall respondents. Hindu respondents are the second largest group, with a total of 11 people (13.9%), while Buddhists are the smallest group with only 4 people (5.1%).

Next, the frequency of the previous school shows the distribution of respondents based on the type of secondary school they have attended. Out of a total of 79 respondents, the majority came from Sekolah Menengah Kebangsaan, with a number of 61 people (77.2%). Meanwhile, respondents from the National Religious Secondary School recorded a number of 9 people (11.4%), followed by the Private Secondary School with 4 people (5.1%). The Other category includes 5 people (6.3%).

Research Hypothesis Testing

Based on the analysis conducted to examine the relationship for each variable in addressing the research objectives, Correlation Testing was carried out to see if there is a positive relationship or otherwise for each hypothesis assumption of the study. Hypothesis 1: There is a significant relationship between economic stability and the choice of culinary field among culinary certificate students at Sungai Petani Community College; Hypothesis 2: There is a significant relationship between career suitability and the selection of culinary fields by culinary certificate students at Sungai Petani Community College.

Table 2 - The relationship between economic stability (IV1) and career suitability (IV2) with the selection of the culinary field (DV)

VARIABLES		IV1	IV2	DV
IV1: ECONOMY STABILITY	Pearson Correlation	1	.861**	.649**
	Sig. (2-tailed)		.000	.000
	N	79	79	79
IV2: CAREER SUITABILITY	Pearson Correlation	.861**	1	.722**
	Sig. (2-tailed)	.000		.000
	N	79	79	79
DV: CULINARY FIELD SELECTION	Pearson Correlation	.649**	.722**	1
	Sig. (2-tailed)	.000	.000	
	N	79	79	79

Based on the correlation analysis, this study evaluates the relationship between economic stability (IV1) and career suitability (IV2) with the selection of the culinary field (DV) and shows that there is a significant relationship between all independent variables and the dependent variable. The correlation between economic stability (IV1) and the choice of culinary field (DV) is significant, with a correlation value of $r = 0.649$ ($p < 0.01$). This indicates that economic stability has a moderate positive influence on the selection of the culinary field.

Next, the relationship between career suitability (IV2) and the choice of the culinary field (DV) has a strong positive correlation with a correlation value of $r = 0.722$ ($p < 0.01$). This reflects that the perception of career suitability greatly influences the respondents' decision to choose the culinary field. In addition, the relationship between the independent variables was also observed. Economic stability (IV1) has a very strong relationship with career suitability (IV2), with a correlation value of $r = 0.861$ ($p < 0.01$). This indicates that economic stability affects the perception of career suitability.

Recommendations

Based on the findings of this study, there are several recommendations that can be considered on behalf of Sungai Petani Community College. Among them are:

Designing awareness and education programs: Organizing awareness programs that emphasize the importance and potential of careers in the culinary field for male students. This includes lectures, workshops, and cooking demonstrations involving successful male chefs.

Increasing family support: Developing initiatives to educate students' families about career opportunities in the culinary field. This can be done through seminars or meetings that explain the stability and job prospects in this industry.

Provision of facilities and learning resources: Ensuring that Sungai Petani Community College has adequate and up-to-date facilities for culinary training. This includes a modern kitchen, complete cooking equipment, and learning materials relevant to current trends.

Collaboration with industry: Establishing collaboration and expertise with local restaurants and hotels to provide industrial training opportunities for students and instructors. This will provide them with practical experience and enhance their employability after graduation.

Recognition and awards: Providing awards or recognition for students who demonstrate excellent performance in the culinary field. This can motivate more students, especially male students, to pursue this field and boost their confidence.

Development of an inclusive curriculum: Reviewing the culinary curriculum to ensure it is inclusive and engages students. The curriculum needs to contain elements that reflect the latest trends in the food and beverage industry.

Social media promotions: Utilizing social media to promote the achievements of male students in the culinary field. The use of platforms like Instagram or TikTok can attract more male students to join culinary programs.

Guidance and mentoring: Organizing a mentoring program where students can interact with professionals in the culinary industry. This will help them gain valuable advice on careers and personal development in this field.

By implementing these proposals, it is hoped that more men will choose the culinary field as a career, thereby changing societal perceptions about gender roles in the food industry.

Conclusion

In the conclusion of this research paper, several important aspects regarding the trend of male participation in the culinary field at Sungai Petani Community College can be summarized. This study shows that there has been a significant change in societal perception towards the culinary field, which was previously considered to be dominated by women. Men are now becoming bolder in entering this field, which indicates a reduction in gender stigma that previously prevented them from pursuing their interest in culinary arts. In addition, economic stability has become one of the main factors influencing male students' decisions to choose a career in the culinary field. Stable job opportunities and reasonable income make this field attractive to them, especially in the context of an increasingly challenging economy. As for job suitability, it plays an important role in career selection. Male students who have an interest and skills in cooking are more likely to choose the culinary field as their career. This shows that career choice is not only dependent on external factors but also on individual interests and passions.

Now, current trends in Malaysian society, including the influence of social media and popular culture, are also impacting the career choices of male students. With the increased exposure to various aspects of culinary arts through digital platforms, more men are attracted to pursue this field. Finally, this study can provide recommendations for educational institutions to continue offering adequate support and resources for male students in the culinary field. This includes providing an inclusive and supportive learning environment, as well as introducing programs that can raise awareness about career opportunities in the culinary industry. Overall, this study emphasizes that with the right support and recognition of male talent in the culinary arts, this field has the potential to grow more rapidly and attract more male students to join.

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PERCEPTIONS AND PROFICIENCY OF INCOME TAX PAYERS IN THE CONTEMPORARY TAX SYSTEM

Amisha Shah
Assistant Professor,
Department of Rural Management,
Faculty of Management,
Gujarat Vidyapith, Ahmedabad.

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Abstract

This paper explores the perceptions, awareness levels, and filing practices of individual income taxpayers in India, with a focus on compliance behavior in the contemporary tax system. Utilizing a quantitative research approach, data were collected from 154 respondents through a structured online questionnaire. The study assesses taxpayer awareness of income tax laws, deductions, and regime preferences, as well as their filing practices and reliance on professional help. Findings indicate that while a majority of taxpayers file returns on time and plan their investments to save tax, there exists a considerable lack of understanding regarding income heads, applicable ITR forms, and tax regimes. The dominance of the old tax regime is gradually shifting as more taxpayers consider transitioning to the new system. The study identifies the importance of tax professionals in navigating complex filing procedures and highlights the urgent need for taxpayer education to promote greater autonomy, awareness, and accuracy in return filing. Recommendations emphasize simplifying the system, enhancing digital access, and implementing targeted literacy initiatives to improve voluntary compliance and foster trust in the taxation framework.

Keywords: *Income Tax System, Taxpayer Awareness, Tax Compliance, Tax Regime, Financial Literacy, Taxpayer Attitude*

Taxation forms the backbone of a nation's economic framework, serving as a critical tool for resource mobilization and socio-economic development. The income tax system in India plays a vital role in nation-building, economic development, social welfare, and maintaining a stable financial framework essential for sustained growth and progress. Income tax is a crucial source of revenue for the government which funds various developmental projects and social welfare programs such as education campaigns, health services, infrastructure development, employment generation activities, etc.

Income tax is a direct tax governed by the Income Tax Act 1961 and administered by the Central Board of Direct Taxes (CBDT), which is a part of the Department of Revenue under the Ministry of Finance in India. It is considered as one of the most important tools of redistribution of wealth by imposing higher tax rates on individuals with higher incomes. Hence, the income inequality can be reduced at a certain extent. The income tax system serves as a tool for the government's fiscal policy too. By adjusting tax rates, exemptions, and deductions, the government can stimulate economic growth, control inflation, and address specific socio-economic objectives.

However, the perceptions and proficiency of taxpayers in navigating the complexities of the income tax system significantly influence tax compliance and revenue generation. This study, *"The Perceptions and Proficiency of Income Tax Payers* *in the Contemporary Tax System,"* aims to explore the attitudes, awareness, and challenges faced by Indian taxpayers.

The study investigates taxpayers' perceptions of the fairness, equity, and transparency of the tax system, alongside their views on how tax revenues are utilized by the government. It further evaluates the awareness of tax laws, available deductions, and investment planning in tax-saving strategies. By analyzing the proficiency of taxpayers in filing returns and their attitudes toward compliance, the study seeks to uncover underlying issues that affect taxpayer behavior. Additionally, it identifies challenges encountered during the tax-filing process and offers actionable recommendations to enhance taxpayer education, simplify the system, and improve support mechanisms for compliance.

Attitudes towards compliance could be improved by enhancing taxpayers' level of tax knowledge and emphasis on technical and computational aspects of filing returns. In other words, tax authorities may have to focus on the technical aspect of the tax knowledge and the content of the tax law in their efforts to improve taxpayers knowledge and reduce the complexity of the income tax systems. (Shaharuddin & Palil, 2016).

Research Objectives

To assess the level of awareness and understanding among taxpayers about tax laws, available deductions, and applicable filing procedures; To analyze the filing practices, regime preferences, and professional assistance sought by taxpayers in the income tax return process; To evaluate the influence of taxpayer proficiency and planning behavior on timely and accurate tax return filing.

Methodology

The study, *"The Perceptions and Proficiency of Income Tax Payers in the Contemporary Tax System,"* employed a quantitative research approach to gather and analyze data. The target population comprised individual income taxpayers in India, and a total of 154 respondents participated in the study. Data were collected using a structured questionnaire designed on Google Forms. The questionnaire included both closed-ended and Likert-scale questions, ensuring the collection of quantifiable data on perceptions, awareness, and challenges related to the tax system. The form was shared through digital platforms, including email and social media, to reach a diverse pool of respondents.

The sampling technique employed was convenience sampling, as participants self-selected to complete the survey based on their availability and willingness. The responses from the Google Forms were exported to a spreadsheet and SPSS (Statistical Package for Social Sciences) software for analysis. Descriptive statistics, such as percentages and frequencies, were used to summarize the data.

Analysis and Interpretation of Data

In this research, total sample size is 154 respondents. The demographic profile is male-dominated, middle-aged, and highly educated. While looking at gender distribution, it is found that the sample is predominantly male (74.0%), with females making up only 26.0% of the respondents. This indicates a significant gender imbalance in the sample.

The largest age group is 45–54 years, comprising 37.0% of the sample. This is followed by the 35–44 years group (25.3%). Younger individuals (18–34 years) make up 26.0%, while seniors (55 years and above) constitute 11.6%. Hence, the sample primarily represents a middle-aged population.

While looking at the educational level, it is observed that a significant majority of respondents are highly educated; 45.5% hold a Master's degree while 32.5% possess a Doctoral degree. Only 0.6% have a high school education or below. This reflects a sample with a strong academic background, likely to be professionals or scholars.

Table 1 - Occupational Profile and Income Heads Under Income Tax Filing

Variables		Frequency	Percent
1. Employment Status	Government Employee	66	42.9
	Private Employee	41	26.6
	Retired	10	6.5
	Self-employed	19	12.3
	Unemployed	18	11.7
2. Income Head in IT Return	Not Known	28	18.2%
	Income from Salary	112	72.7%
	Income from House Property	6	3.9%
	Income from Profits and Gains from Business or Profession	22	14.3%
	Income from Capital Gain	15	9.7%
	Income from Other Sources	26	16.9%
Total:		154	100.0

It is clear from the above table that the largest group of respondents are Government Employees (42.9%), indicating a strong representation from the public sector. Private Employees make up 26.6%, followed by Self-employed (12.3%), Unemployed (11.7%) and Retired (6.5%) Overall, nearly 70% of the sample is currently employed, either in the government or private sector.

A significant majority (72.7%) report Income from Salary, aligning with the high proportion of employed individuals. Other sources of income include Income from Profits and Gains from Business or Profession (14.3%), Income from Capital Gain (9.7%), Income from Other Sources (16.9%), Income from House Property (3.9%), Surprisingly, 18.2% of respondents are not aware of their income head in IT returns, suggesting a need for greater financial literacy or tax awareness. Thus, respondents are predominantly salary-dependent, with minimal representation from passive income sources like property or capital gains. The high percentage of government employees may influence financial stability, job security, and pension coverage within the respondent group.

Table 2 - Income Brackets and Corresponding Tax Payments of Respondents

Variables		Frequency	Percent
Annual Income from All Sources	Up to Rs. 5 Lacs.	44	28.6
	Rs. 5 Lacs to 10 Lacs	39	25.3
	Rs. 10 Lacs to 20 Lacs	50	32.5
	Rs. 20 Lacs to 30 Lacs	13	8.4

	More than Rs. 30 Lacs	8	5.2
Amount of Income Tax Paid in the Last Year	I don't know.	24	15.6
	Nil	37	24.0
	Up to Rs. 10,000	7	4.5
	Rs. 10,000 to 50,000	14	9.1
	Rs. 50,000 to 1,00,000	22	14.3
	Rs. 1,00,000 to 3,00,000	26	16.9
	Rs. 3,00,000 to 5,00,000	10	6.5
	More than Rs. 5,00,000	14	9.1
Total:		154	100.0

It is denoted in the table above that a significant majority (86.4%) of individuals have an income below Rs. 20 Lacs. The most common income group is Rs. 10 Lacs to 20 Lacs (32.5%), closely followed by the Up to Rs. 5 Lacs category (28.6%). High-income groups (above Rs. 20 Lacs) are a smaller portion (only 13.6%).

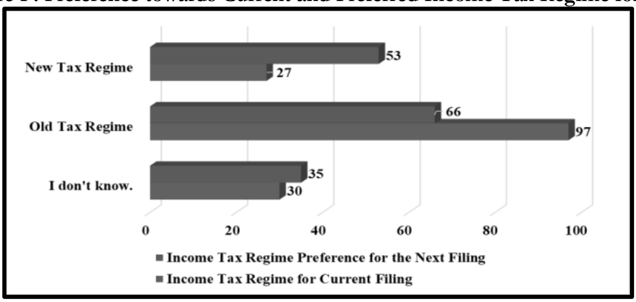
It is further shown that nearly 40% of individuals are either unaware of their tax payments or do not pay any. The largest paying group (16.9%) is in the Rs. 1,00,000 to 3,00,000 range. A good number (around 30%) fall into higher tax brackets (Rs. 50,000 and above). The tax burden appears skewed towards a smaller group likely from higher income brackets.

Thus, the majority of respondents are in the lower to mid-income category, yet a notable portion of tax contributions seem to come from a smaller segment. 24% report not paying tax, which may suggest exemptions, under-threshold income, or possible tax evasion. 15.6% are unaware of their tax details—this might reflect a lack of financial literacy or outsourcing of financial management. Thus, the data suggests a need for financial education, especially regarding income tax responsibilities and awareness.

Table 3 - Comparative Analysis of Current and Preferred Income Tax Regime for Filing

	Income Tax Regime for Current Filing		Income Tax Regime Preference for the Next Filing	
	Frequency	Percent	Frequency	Percent
I don't know.	30	19.5	35	22.7
Old Tax Regime	97	63.0	66	42.9
New Tax Regime	27	17.5	53	34.4
Total	154	100.0	154	100.0

Figure 1 : Preference towards Current and Preferred Income Tax Regime for Filing



63% of respondents filed their returns under the Old Tax Regime, showing its dominance as the preferred choice for current filings. Only 17.5% opted for the

New Tax Regime, suggesting that it may not yet be widely adopted. While 19.5% of respondents are unsure about the regime used for their current filing, indicating a lack of involvement or awareness.

The proportion of respondents preferring the New Tax Regime increases significantly from 17.5% to 34.4%, reflecting a growing interest or perceived benefits. The preference for the Old Tax Regime drops from 63% to 42.9%, suggesting a potential shift in behaviour as taxpayers seem shifting their choices. Uncertainty remains slightly higher for the next filing (22.7%) compared to the current filing (19.5%), highlighting the need for clarity about regime benefits.

Table 4 - Income Tax Return Filing Practices and Preferences of Respondents

Particulars	Responses	Count	Percentage
Person who filed IT Return	I don't Know	5	3.2%
	Self	49	31.8%
	Colleagues or friend	19	12.3%
	CA or Professional Agent	81	52.6%
Whether any professional help was taken.	No, never	45	29.2%
	Yes, sometimes	36	23.4%
	Yes, always	73	47.4%
IT Return Filing Fees	Nil	66	42.9%
	Up to Rs. 500	26	16.9%
	Rs. 501 to 1000	39	25.3%
	Rs. 1001 to Rs. 2000	11	7.1%
	Rs. 2001 to 5000	7	4.5%
	More than Rs. 5000	5	3.2%
Did you file your last tax return on time?	No	16	10.4%
	Yes	138	89.6%
IT Return Filing Website	Don’t know	50	32.5%
	Income Tax India Official Website	97	63.0%
	ClearTax	6	3.9%
	TaxSpanner	1	0.6%
	MyITReturn	2	1.3%
	TaxBuddy	1	0.6%
	Tax2win	1	0.6%

Tax professionals play an important role in the implementation of income tax law of the country. They help the taxpayers in discharging their tax obligations in an efficient manner. They are well aware of the weakness of tax law, tax administration and problems faced by taxpayers. So, they can be helpful in understanding the various aspects of income tax system. The majority (52.6%) of people relied on Chartered Accountants (CAs) or professional agents to file their last IT return. This highlights a preference for professional assistance, possibly due to complexity or lack of time. About 31.8% of respondents filed their IT returns themselves. This indicates a significant proportion of people are either confident in their knowledge or find their returns simple enough to handle independently. A smaller group, 12.3%, depended on colleagues or friends. This might reflect informal trust-based help for filing returns. Only 3.2% of respondents do not know who filed their returns. This small percentage may represent individuals who are detached from financial responsibilities or uninformed about their financial dealings.

47.4% (nearly half) of respondents always take professional help in filing their IT returns. This suggests a strong reliance on experts, possibly due to the complexity of their financial transactions or tax laws. 29.2% of respondents have never sought professional help, indicating they either find tax filing simple or use accessible tools and platforms for independent filing. 23.4% of respondents seek professional help only sometimes. This indicates they might manage simpler filings independently but prefer experts for more complicated cases.

The majority of respondents (89.6%) filed their last tax return on time. This indicates a strong sense of compliance and awareness regarding tax deadlines among the respondents. A small proportion (10.4%) failed to file their tax returns on time. While this is a minority, it highlights potential challenges, such as lack of preparedness, unawareness of deadlines, or external issues.

32.5% of respondents do not know which website was used for filing their returns. This could indicate a lack of involvement in the filing process, likely due to delegating the task to professionals or third parties. 63% of respondents use the Income Tax India Official Website to file their returns. This demonstrates strong adoption of the government's digital platform for tax filing, indicating trust and accessibility.

Collectively, private platforms like ClearTax (3.9%), MyITReturn (1.3%), and others account for a small share. While these platforms may offer additional features, their usage is limited compared to the official government website.

Table 5 - Tax Awareness, Planning Behavior, and Attitudes Toward Income Tax Filing

Particulars	Responses	Count	Percentage
Awareness about the available deductions	Not at all	15	9.7%
	Some of them	36	23.4%
	Many of them	103	66.9%
Advance Planning of Investment Portfolio to Save Income Tax	No	35	22.7%
	Yes	119	77.3%
Frequency of review the changes in income tax laws and policies	Always stay updated	59	38.3%
	Never review	13	8.4%
	Occasionally review	63	40.9%
	Rarely review	19	12.3%
ITR Form	I don't know	63	40.9%
	ITR-1	60	39.0%
	ITR-2	17	11.0%
	ITR-3	7	4.5%
	ITR-4	7	4.5%

66.9% of respondents are aware of many deductions available under the tax regime. This suggests that a majority have a good understanding of potential tax-saving options. 23.4% of respondents know some deductions. This group may be partially informed but could benefit from further guidance to optimize their tax planning. 9.7% of respondents are not aware at all of the available deductions, indicating a gap in financial literacy or lack of exposure to tax-saving strategies.

77.3% of respondents plan their investment portfolio in advance to save income tax, indicating proactive financial behavior aimed at maximizing tax benefits.

22.7% of respondents do not engage in advance planning. This group may either lack awareness, face time constraints, or rely on ad-hoc financial decisions.

38.3% of respondents always and 40.9% occasionally review changes in income tax laws and policies. This reflects a strong tendency to stay informed about updates relevant to tax compliance and savings. The 38.3% who always stay updated demonstrate high financial awareness and are likely to make better-informed decisions regarding tax filing and investments. The largest group (40.9%) reviews changes occasionally. While this reflects some awareness, occasional monitoring might result in missed opportunities or non-compliance with recent updates. 20.7% of respondents either rarely (12.3%) or never (8.4%) review these changes. This suggests that a significant minority may not be fully informed about opportunities or obligations introduced by tax law updates.

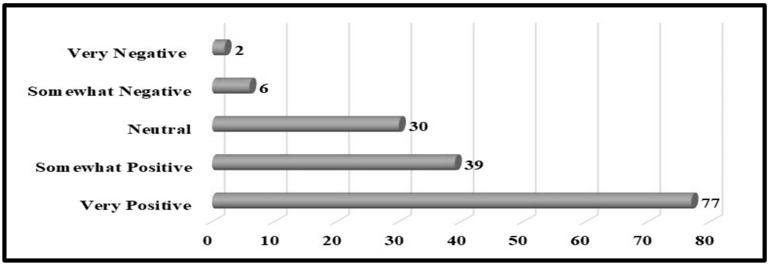
A significant portion of respondents (40.9%) are unaware of the ITR form they are required to file. This reflects a lack of involvement or understanding of their tax filing requirements. The 40.9% who do not know their applicable ITR form may rely entirely on professionals or intermediaries for filing, reflecting a lack of awareness or disinterest in the tax process. 39% of respondents reported using ITR-1, which is designed for salaried individuals, pensioners, or individuals with income from one house property and other sources (interest, etc.). The widespread use of ITR-1 suggests that most respondents are salaried individuals or have simple income structures that do not require complex reporting.

Only 11% use ITR-2 (for individuals with income from capital gains or multiple house properties). 4.5% use ITR-3 (for individuals with income from business or profession). 4.5% use ITR-4 (for individuals under the presumptive income scheme). The low usage of ITR-2, ITR-3, and ITR-4 indicates that most respondents have relatively straightforward income profiles.

Table 6 - Overall Rating of the Attitude Towards Tax Filing

Responses	Count	Percentage
Very Positive	77	50.0%
Somewhat Positive	39	25.3%
Neutral	30	19.5%
Somewhat Negative	6	3.9%
Very Negative	2	1.3%
Total	154	100.0%

Figure: 02 - Attitude Towards Tax Filing



75% of respondents have a positive attitude towards tax filing, with 50% rating it as very positive and 25% as somewhat positive. This reflects general satisfaction or at least acceptance of the tax filing process. 19.5% of respondents are neutral, suggesting they neither have strong positive nor negative feelings towards tax filing, possibly due to indifference or lack of personal involvement in the process. Only 5.2% of respondents have a negative view, with 3.9% rating it as somewhat negative and 1.3% as very negative. This indicates that tax filing, while potentially burdensome, is not viewed with strong negativity by the majority.

This study provides a comprehensive insight into the perceptions, awareness, and behavioral patterns of Indian income taxpayers within the contemporary tax system. The findings reveal that while a majority of respondents demonstrate timely compliance and proactive investment planning, significant gaps persist in terms of tax law understanding, awareness of applicable deductions, and knowledge of filing procedures such as ITR forms and tax regimes. A considerable reliance on tax professionals and lack of personal involvement in the filing process suggest complexities within the system that deter self-filing. Notably, a portion of respondents are unaware of their income heads or tax payments, indicating a need for improved tax literacy. The preference shift toward the new tax regime reflects a growing openness to simplification, provided adequate information and support systems are in place. To enhance tax compliance and foster a more informed taxpayer base, it is imperative for authorities to simplify processes, strengthen digital tools, and initiate widespread taxpayer education campaigns focused on both legal knowledge and procedural clarity.

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