JOURNAL: PRIMAX INTERNATIONAL JOURNAL OF COMMERCE AND MANAGEMENT RESEARCH
ISSN: Print ISSN: 2321-3604 Online ISSN: 2321-3612 & Open Access, Impact Factor: 7.184
(A DOUBLE-BLIND PEER REVIEWED, OPEN ACCESS REFEREED QUARTERLY JOURNAL)
PRIMAX IJCMR VOLUME NO.11, ISSUE NO-4, JANUARY -MARCH- 2024 Research Article

PATENT PUBLICATION RELATED AWARENESS AMONG ENGINEERING* COLLEGE STUDENTS IN TAMIL NADU

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***(Publication from Major Research Project, funded by TANSCHE)**
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Abstract

Intellectual property (IP) is crucial for students, not only for the successful completion of their academic courses but also to prepare them for a world of enterprise and innovation post-graduation. Educational institutions nationwide are increasingly focusing on research that leads to commercializable technologies. Students from undergraduate to doctoral levels are being made aware of this emerging environment. Engineering students, for instance, dedicate about 25% of their final year to projects, while postgraduate students engage in full-time research. They collaborate closely with faculty and technicians. Enhanced IP awareness fosters an educated and receptive community within organizations. This is particularly important for technology-based organizations, which can generate significant value by creating and exploiting IP assets such as patents and trade secrets. Students are the pillars of the nation, making legal awareness, especially regarding IP and its protection, essential. Engineering students, in particular, play a vital role in the creation and invention of goods and ideas. Therefore, fostering a culture of IP awareness and protection is critical. This paper aims to analyze the level of awareness regarding patents and their publication among students.

***Key words**: Patent, awareness level, Engineering College students*

Introduction

"Securing a patent for an invention stands as a pivotal step, offering multifaceted advantages to inventors and businesses alike. Primarily, it provides legal armor, conferring exclusive rights over the invention's use, sale, or licensing for a specified duration. This shield against unauthorized use not only safeguards the innovation but also prevents potential infringement, ensuring its protected status. Moreover, a patent isn't merely a legal document; it embodies commercial value. It transforms the invention into a market asset, fostering a competitive edge that allures investors and partners. This exclusivity in the marketplace fuels growth, enhancing market share and profitability by outshining competitors. Crucially, filing for a patent acts as a beacon for innovation. It serves as a testament to the value of creativity, incentivizing further research and development. By securing the fruits of their labor, inventors are encouraged to explore uncharted territories, knowing their efforts are safeguarded and rewarded. Additionally, a patent erects barriers against replication. Its legal standing dissuades competitors from attempting to copy or mimic the invention, reinforcing

the protection and value of the original creation. Furthermore, patents aren't confined to protection; they are avenues for revenue. Through licensing or selling the patent, inventors can generate substantial income, offering others permission to utilize their innovation in exchange for royalties. In essence, filing for a patent is pivotal for safeguarding intellectual property, securing market dominance, fueling innovation, and unlocking the commercial potential of an invention. It stands as a strategic maneuver, empowering inventors and businesses to both protect and profit from their groundbreaking ideas."

Problems in filing patent

"Though seeking patent protection is vital for safeguarding innovations, the journey is laden with challenges that inventors and businesses often face. To begin, the intricacies of patent law pose a formidable obstacle. Navigating the legal requirements and drafting a meticulous patent application demand a deep understanding of intellectual property regulations. Even minor errors in this process can significantly impact the patent's validity or coverage. Timing becomes a critical concern. The patent filing process is time-sensitive, and any delay may compromise the invention's novelty. Public disclosure before filing might render the innovation ineligible for patent protection in numerous jurisdictions, heightening the pressure on swift and strategic filing. Financial constraints also loom large. The costs associated with patent filing—from attorney fees to application expenses—can be daunting. This financial burden may deter smaller inventors or startups with limited resources from pursuing patent protection.

Moreover, the stringent examination by patent offices presents a challenge. Examiners meticulously scrutinize applications, often leading to objections or rejections based on prior art or insufficient disclosure. Addressing these concerns demands time and expertise. Crafting the patent's scope poses another hurdle. Striking a balance between specificity and breadth in patent claims is crucial. Overly broad or ambiguous claims may weaken the patent's enforceability against potential infringers. Lastly, navigating international patent systems adds complexity. Securing patents across different countries requires adept handling of varied regulations, demanding strategic planning and resources.

In essence, while patents offer invaluable protection, the path to securing them is riddled with challenges. Navigating legal intricacies, timing constraints, financial implications, examination processes, claim precision, and international considerations demands astute planning and expertise to ensure robust patent protection for innovations."

Reviews of Literature

Cao, Q. (2014)[1] examined five key themes in the context of attitudes toward Intellectual Property Rights (IPR) in China's creative industry: motivation in design, current IP protection practices, IP awareness, perceived effectiveness of IP law enforcement, and ethical beliefs within the industry. These themes collectively informed a model illustrating people's perspectives on IPR.

Mantoro, T. & Prihastomo, Y. (2012)[2] delved into the global marketplace of ideas and highlighted how accusations of certain countries' reluctance to protect IP overlook cultural variations in perceiving IP. They found that cultural factors like humane orientation and in-group collectivism negatively impact IP protection, whereas uncertainty avoidance and future orientation positively influence it. The paper discussed managerial implications arising from these cultural insights.

Lau, A. K. W., Kong, S. L. S., & Baark, E. (2013)[3] emphasized the importance of fostering an IPR-friendly environment and improving attitudes toward IPR in China's creative sectors. Drawing attention to successful practices in countries like South Korea, Japan, and Finland, the authors suggested tailoring strategies to fit the specific attributes of Chinese society to address the existing challenges.

Dai, Y., Popp, D., and Bretschneider, S. (2005)[4] focused on macro-level influences, such as the economic and political climate, on IP-related behaviors. They also highlighted the significance of social forces like knowledge and information exchange. The study suggested exploring changes in behavior at the university level to better understand the role of such forces.

Statement of the problem

The awareness level of students regarding filing patent applications varies widely. While some students, particularly those in fields like engineering, technology, and business, may possess a considerable understanding of patents and their importance, many others might have limited awareness or knowledge.

Students often exposed to specialized courses or programs that emphasize intellectual property rights may have a better grasp of patent filing procedures and the significance of protecting innovations. They might understand the basics of patent law, the steps involved in filing a patent, and the potential benefits of securing patent rights.However, a significant portion of students, especially those in non-technical fields or at earlier stages of their education, might have minimal exposure to patent-related concepts. Their awareness might be

limited to a general understanding of patents as legal protections for inventions without a deeper comprehension of the intricacies of filing, the costs involved, or the strategic implications for future career paths.

Overall, the awareness of students in filing patent applications is often contingent on the educational resources available to them, their field of study, and their exposure to specialized courses or programs that cover intellectual property rights. Efforts to enhance this awareness, especially among students in diverse disciplines, could prove valuable in fostering a culture of innovation and encouraging future entrepreneurs and inventors to protect their ideas.

Objectives

- To analyse the awareness level of students on patent and its filing requirements.

Methodology

- The study used descriptive and inferential analysis
- 450 samples are selected for the study
- Cluster sampling technique is adopted for the selection of samples
- Study area is the northern regions of the tamilnadu and the engineering colleges in these areas are taken
- Mean, standard deviation and independent sample t test are applied to test the objectives.

Analysis on the Objectives

I Profile result:

Table 1 Gender

Gender	No of Respondents	Percentage
Male	290	64.4
Female	160	35.6
Total	450	100.0

Source: Primary Data

Table 2 Family Annual Income in lakhs

Income (in Lakhs)	No of Respondents	Percentage
Below 1.5	334	74.2
1.5-2.5	47	10.4
2.5-3.5	28	6.2
3.5-4.5	27	6.0
Above 4.5	14	3.1
Total	450	100.0

Source: Primary Data

Table 3 Discipline

Discipline	No of Respondents	Percentage
Civil Engineering	41	9.1
Mechanical Engineering	60	13.3
Computer Engineering	100	22.2
ECE	51	11.3
EEE	112	24.9
Others	86	19.1
Total	450	100.0

Source: Primary Data

Table 4 Graduation

Graduation	No of Respondents	Percentage
UG	369	82.0
PG	81	18.0
Total	450	100.0

Table 5 Want to be an entrepreneur as a result of IP Creation

Want to be an entrepreneur	No of Respondents	Percentage
Yes	274	60.9
No	176	39.1
Total	450	100.0

Source: Primary Data

II Analysis of the study

Table 6 Mean and SD of Patent Awareness

	Mean	SD
Concept Awareness	32.09	6.73
Filing Related Awareness	41.35	9.39
Patent Publication Related Awareness	41.37	9.41
Overall Awareness of IPR	114.81	23.25

Source: Computed from Primary Data

Based on mean score Patent Publication Related Awareness (41.37), followed by Filing Related Awareness (41.35), Concept Awareness (32.09). The students' respondents know that

Table 7 Quartiles of Overall Awareness of IPR

Factors	**Percentile 25 (Q1)**	**Median (Q2)**	**Percentile 75 (Q3)**
Overall Awareness of IPR	102	115.5	131

Source: Computed from Primary Data

If the score is below First Quartile (Q1) is called Low level. If the score is lies between First Quartile (Q1) and Third Quartile (Q3) is called Moderate level. If the score is above Third

Quartile (Q3) is called High level. Based on this score, the above factors are converted into Low, Moderate and High level and are presented in the following table

Table 8 Frequency Distribution of Level of Overall Awareness of IPR

Level of HRM Practices	Frequency	Percent
Low	117	26.0
Moderate	214	47.6
High	119	26.4
Total	450	100.0

Source: Computed from Primary Data

HYPOTHESIS I

Null Hypothesis: There is no significant difference between Male and Female with respect to awareness level on Patent and its filing procedures

Table 9: t-test for significant difference between Male and Female with respect to Factors of Equitable Standard Education of Parents

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Concept Awareness	Equal variances assumed	7.456	.007	2.289	448	.023	1.509	.659	.213	2.804
	Equal variances not assumed			2.131	266.609	.034	1.509	.708	.115	2.903
Filing Related Awareness	Equal variances assumed	3.695	.055	1.739	448	.083	1.605	.923	-.209	3.418
	Equal variances not assumed			1.657	284.622	.099	1.605	.968	-.302	3.511
Patent Publication Related Awareness	Equal variances assumed	6.019	.015	2.641	448	.009	2.432	.921	.622	4.241
	Equal variances not assumed			2.497	278.237	.013	2.432	.974	.514	4.349
Overall Awareness of IPR	Equal variances assumed	8.004	.005	2.436	448	.015	5.545	2.277	1.071	10.020
	Equal variances not assumed			2.265	265.741	.024	5.545	2.448	.726	10.365

There is no significance difference between male and female respondents with regard to awareness level on patent and its filing related procedures, since P value is greater than 0.05. Hence the null hypothesis is accepted at 5% level with regard to significant difference between Male and Female with respect to awareness level on Patent and its filing procedure.

Suggestion

In the realm of innovation, securing the fruits of creativity is as vital as the inventive process itself. Enhancing the patent filing journey demands a meticulous blend of strategy, diligence, and legal acumen. Commencing this voyage begins not with a mere idea, but with a comprehensive reconnaissance of existing patents, ensuring the uncharted uniqueness of the innovation.

Documenting every iota of the invention's genesis becomes the cornerstone of this expedition. From the earliest sketch to the final prototype, each step etched in records serves as a testimonial to the idea's evolution. Collaborating with adept legal minds, experienced in the labyrinth of patent laws, becomes indispensable. Their expertise is the compass that navigates through the tumultuous seas of claim drafting and legal intricacies.

Clarity is the lodestar when penning down the patent application. Precision in technical descriptions, supplemented by vivid diagrams and data, crafts a narrative that even the uninitiated comprehend. The claims, akin to sentinels guarding the innovation's core, demand exactitude, delineating the boundaries of protection sought.

Vigilance becomes the sentinel, guarding against the perils of missed deadlines that could mar the progress. Crafting a global shield for the invention often beckons, demanding an understanding of the mosaic of international patent laws or the guidance of those well-versed in this terrain.

This journey demands not just attention to detail but an astute allocation of resources. Budgeting wisely, prioritizing crucial stages, and shrouding the invention in confidentiality before its unveiling are critical components. A regular review ensures that the evolving invention aligns seamlessly with the patent application.

Once the patent sails through the tempests of examination and scrutiny, the voyage doesn't cease. Vigilant monitoring of the market for potential infringement and the readiness to assert patent rights stand as sentries guarding the innovation's sanctity.

In essence, the road to an impeccable patent filing isn't merely about paperwork; it's a saga of meticulousness, strategy, and unwavering dedication to preserving the essence of innovation.

Conclusion

Raising awareness about patent filing is pivotal in empowering innovators and safeguarding their creations. Educating individuals and organizations about this intricate yet invaluable process can pave the way for a more innovative and protected society.

Communication stands as the cornerstone in this endeavor. Initiating conversations, workshops, and seminars that demystify the patent filing process becomes imperative. These platforms, adorned with real-world case studies and interactive sessions, serve as beacons, illuminating the path to patent protection.

Collaboration with educational institutions, startups, and industry players acts as a catalyst in spreading this knowledge. Embedding patent education in curriculums and fostering partnerships that mentor budding inventors not only instills the importance of patents but also nurtures a culture of innovation.

Digital landscapes wield immense power in reaching broader audiences. Harnessing the potential of online platforms through engaging content, webinars, and accessible resources amplifies the reach, making patent filing know-how readily available to a global audience.

Empowering inventors with tools and resources, simplifying the language of patents, and dismantling the myths surrounding the process serve as the cornerstone of this awareness campaign. Highlighting success stories of patents fueling groundbreaking advancements further underscores the significance of this protective shield for intellectual property.

Governmental support and policy advocacy play an indispensable role. Streamlining procedures, offering incentives, and providing accessible guidance can bolster participation in patent filings, especially among small and medium enterprises.

Ultimately, fostering a culture that venerates innovation and recognizes the pivotal role of patents in nurturing and safeguarding it is the bedrock upon which a society that values intellectual property rights stands tall. Awareness on patent filing isn’t merely about disseminating information; it’s about nurturing a mindset that cherishes and protects the ingenious ideas shaping our world.

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