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The Strategic Role Of IP Management In Fostering Innovation Ecosystems

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Abstract
This study investigates the role of IP management in fostering an innovation ecosystem. IP management, defined as the process of recognizing and protecting organizational assets like trade secrets, copyrights, and trademarks, also safeguards software and data classified as intangible assets. Organizations follow steps to protect these assets, starting with identifying and documenting strategically important ones, and then filing applications to register copyrights and safeguard trade secrets. IP licensing enables asset monetization, and IP enforcement allows organizations to act when IP assets are used without consent, motivating them to innovate with confidence.The literature review indicates the growing importance of IP rights in driving growth, competition, collaboration, knowledge sharing, and encouraging innovation. IP management also encourages investments in R&D by providing a framework that deters infringements. Startups, in particular, benefit from IP protection, which enhances their ability to attract investments. Additionally, IP management enables open innovation by facilitating collaboration and resource-sharing among entities.

Keywords: *Intellectual Property, global Entrepreneurship Index, Global Innovation Index, Intellectual Property Rights, Innovation Ecosystem.*

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I. Introduction

"Intellectual Property (IP) Management" plays a significant role in fostering an innovation ecosystem in several ways such as innovation encouragement, competitive advantage, risk management, maintaining investment strategies, improving market positioning, maintaining secrecy, and identifying collaborative opportunities. A strong IP portfolio helps the company to be one step ahead of its competitors in the global market and it is valuable for the firm to lead high market share and engage loyal customers effectively. A strong customer base is maintained by an organisation through IP management and it is valuable to achieve highly competitive advantages during working hours. The role of the innovation ecosystem is valuable to adapt to Industry 4.0 and it is helpful to maintain R&D activities in the workplace[1]. Inter organisational activities of the firms such as training and networking are improved with the positive impact of an innovative ecosystem. It is associated with the technological adaptation side in the workplace to manage working patterns.

Innovation ecosystems are developed through growing interest in the global market and innovation strategies are associated with technological up gradation. There are two layers in innovation ecosystems such as "an explorative layer", and "an exploitative layer". "An explorative layer" helps to identify opportunities for innovation. "An exploitative layer" can create new value propositions for customers in the workplace[2]. Companies try to align strategic positioning with innovation ecosystems through adaptation of Industry 4.0 and it is essential for the firms to improve business opportunities and values among competitors in the workplace. IP management helps to develop innovation ecosystem strategies to capture "complex interrelations, the interdependencies and competition" effectively. It is valuable for the companies to develop academic management discourse and develop practice-oriented services. Innovation ecosystems are operated with the positive impact of IP management and its activities in an industry.

II. Statement Of The Problem

Unclear regulations, weak IP protection, lack of IP management strategies, and ownership challenges are significant issues of the IP management strategies in the innovation ecosystem. The development of clear regulations and legal precedents are hampered due to unclear regulations and it is difficult to enforce IP rights

[1]Matt, D. T., Molinaro, M., Orzes, G., & Pedrini, G., The role of innovation ecosystems in Industry 4.0 adoption, 32 *Journal of Manufacturing Technology Management* 369-395 (2021)
[2]Visscher, K., Hahn, K., & Konrad, K., Innovation ecosystem strategies of industrial firms: A multilayered approach to alignment and strategic positioning, 30 *Creativity and innovation management* 619-631 (2021)

and can pose risks for organisations. Emerging markets have weaker legal frameworks and enforcement mechanisms in the workplace due to weak IP protection.
The study aims to understand the importance of IP management in fostering innovation ecosystems.

III. Research Objectives

1 To evaluate the role of IP management in developing an ecosystem of innovation in an industry
2 To access the importance of trademark protection and innovations workshops for developing innovation ecosystems
3 To examine the challenges related to protect IP for innovation ecosystems

IV. Literature Review

A relationship between IP, entrepreneurship, and innovation ecosystems

Three elements are valuable for an industry at a global level to access structural relationships. According to Reis et al. (2021) "global Entrepreneurship Index (GEI)", "the US Chamber International IP Index (IPI)" and "the Global Innovation Index (GII)" are several elements of IP management and it helps to develop the innovation ecosystem in the workplace[3]. IP management and entrepreneurship have a casual relationship with the innovation ecosystem and it is valuable to improve the performance of ecosystems. IP management helps to generate innovative assets and foster competitive advantages of an industry in the global market.

Improvement of "Intellectual Property Rights (IPR)" to develop economic innovation

IPR protection and firm innovation are associated with financing constraints (FC) in the global market and it is valuable to improve FC and it can hamper incremental innovation. Imitational innovation strategy is valuable for the companies to develop business opportunities and innovation. As per Abdin et al. (2024), firm-level innovation is developed through IPR protection and transition economics are developed with the positive impact of "imitational innovation strategy" and IPR protection is significant for these economics in the workplace[4]. Innovation and technology adaptation are crucial for the companies through IPR protection and it helps to foster innovation ecosystems successfully. IPR protection is helpful for the companies to develop the firm's innovation activities.

Challenges related to protect IP for innovation ecosystems

Various challenges have been experienced by the companies in the workplace to innovate the ecosystem such as "funding constraints", "market entry barriers", "digital challenges", and "technical and legislation challenges". These challenges create a negative impact on the ecosystem to develop business strategies effectively. IP management cannot be able to protect "trademarks from infringement" due to digital challenges. Lack of technical insights and expertise are major issues for the companies to manage innovation ecosystems. Economic development and monetisation are improved with the help of IP management and it is valuable for the companies in the global market. IPR protection can be hampered due to the negativity of the innovation ecosystem.

Theoretical underpinning

Utilitarian theory

One type of moral theory is Utilitarian theory and it is associated with IP management in an industry. As mentioned by Häyry (2021), it is a popular ethical theory and it helps to influence political, social philosophy and improve policy formation in an industry[5]. It is valuable for an industry to develop the strategic role of IP management and it helps to maintain decision-making processes successfully.

Social planning theory

Policymakers, planners, and government agencies are associated with social planning of an industry and it helps to develop social justice, equity, participation, and rights in the workplace. The strategic role of IP management is valuable for an industry to foster an ecosystem of innovation. The concept of theory helps to maintain principles of social justice and improve community effectiveness and wellbeing.

[3]Reis, D., Moura, F., & Aragão, I., Entrepreneurship, intellectual property and innovation ecosystems, 9 *International Journal for Innovation Education and Research* 108-134 (2021)
[4]Abdin, J., Sharma, A., Trivedi, R., & Wang, C., Financing constraints, intellectual property rights protection and incremental innovation: Evidence from transition economy firms, 198 *Technological Forecasting and Social Change* 122982 (2024)
[5]Häyry, M., Just better utilitarianism, 30 *Cambridge Quarterly of Healthcare Ethics* 343-367 (2021)

Conceptual schema

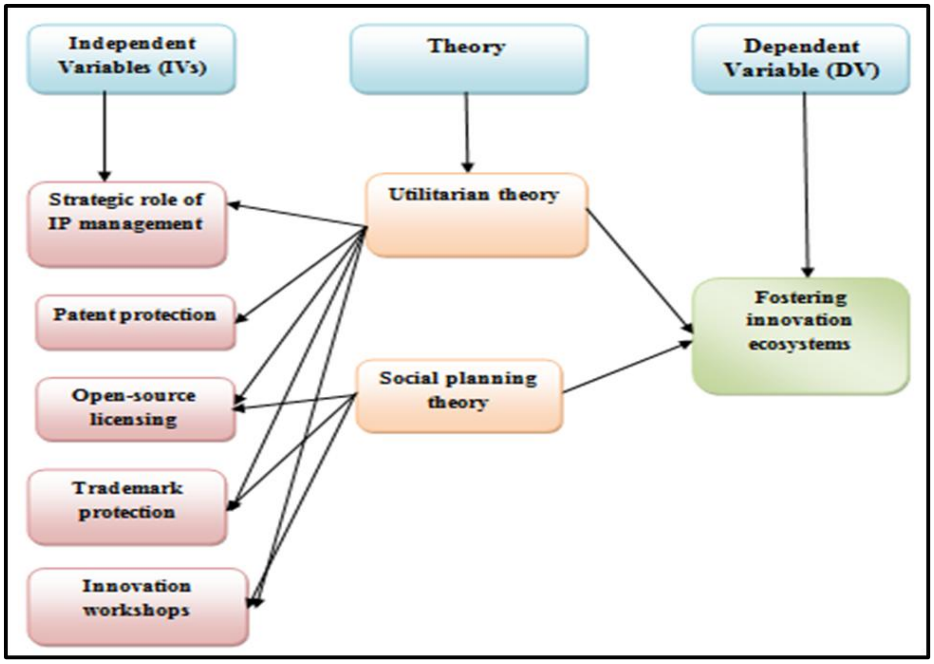

Figure 1: Conceptual schema
(Source: Self-developed)

Literature gap

The study is associated with the importance of IP management to foster an ecosystem of innovation successfully. IP management is valuable for an industry to maintain trademark protection, and innovation workshops in the global market. Hence IPR laws related information and articles are not mentioned in the study and it is a significant gap for the study.

V. Research Methodology

Policy-making is essential for effective IP management, creating an environment conducive to innovation. In the methodology, a quantitative approach has been used to measure IP management's effectiveness in fostering innovation. Data collection involved an online survey with 51 participants, primarily IP and R&D professionals, using snowball sampling through LinkedIn. Responses were analysed in IBM SPSS, employing Likert scales, correlation, and regression analyses, while ensuring ethical considerations like informed consent and data anonymity.

Methodological paradigm is helpful for the study to collect data from different sources. “Positivism philosophy”, “deductive approach”, “descriptive design”, and “primary data” have been followed by the researcher in the study.

Philosophy

“Positivism philosophy” is valuable for the study to achieve knowledge from “objective observations” and “measurements”. Strategic role of IP management helps to innovate ecosystems and it is one type of “quantitative method” and "positivism philosophy” helps to maintain the methodological patterns successfully. The philosophy helps to discover scientific assumptions and principles of research paradigms[6]. The quality of findings and scientific assumptions are improved with the help of “positivism philosophy” here.

Approach

“Deductive approach” is valuable for the study to test hypotheses and theories for logical reasoning in the study. It is one type of “top-down approach” and tests theories through observations. Structured and systematic

[6]Park, Y. S., Konge, L., & Artino Jr, A. R., The positivism paradigm of research, 95 *Academic medicine* 690-694 (2020)

patterns are followed by the researcher through a "deductive approach"[7]. It is valuable to gather numerical and reliable data from identified samples in the study.

Design

"Descriptive design" is valuable for the study to identify characteristics in a target market and it helps to achieve reliable and valid information about the strategic role of IP management to foster the innovation ecosystem. Knowledge concepts and critical issues of the study are identified and mitigated through the impact of modern technologies[8]. The design helps to obtain information and describe a phenomenon.

Data collection

"Primary data" has been collected by the researcher through a "quantitative method". Researcher collects data with the help of "Google forms" and it is valuable for the researcher to grab valid insights about the strategic role of IP management in innovation ecosystems. Primary data collection takes less time and it helps to interpret numerical data about the study[9]. Accurate and private data have been collected by the researcher through the "primary data collection method". "Primary data" is directly relevant to research questions and objectives and accurate research findings are achieved by the data collection strategies here.

Population and sample size

"Population and sample size" is valuable for the study as it helps to gain accurate information about the strategic role of IP management in the innovation ecosystem in several firms. The companies' managers are selected as the population by the researcher in the study to know about the strategic role of IP management. A total of 200 managers are selected from different companies as a population and among these managers, 71 participants are identified by the researcher as sample size. These individuals provide information about the necessity of IP management to foster an innovation ecosystem.

Sampling techniques

"Simple random sampling" method has been followed by the researcher in the study to select a sample size from the large population in the study. Major advantages of the technique are simplicity and lack of bias during data collection. Each member of the population has an equal chance to be chosen as a respondent in the study[10]. The pattern is valuable for the researcher to collect valid and reliable data from engaged participants.

Data analysis strategies

"Primary quantitative analysis" has been done by the researcher in the research through "statistical method". IBM-SPSS software has been used by the researcher to analyse collected data. "Descriptive", "correlation", "regression", "ANOVA" and "graphical analysis" have been performed by the researcher through IBM-SPSS software in the research paper.

Validity and reliability

"Reliability test" is performed by the researcher to calculate the "Cronbach Alpha value" in the study. The value is less than 0.1 and it helps to understand the reliability of the thesis paper.

Ethical considerations

Study ethics are maintained by the researcher through statistical methods and the names of survey participants are not revealed by researcher here.

[7]Park, D., Bahrudin, F. I., & Han, J., Circular reasoning for the evolution of research through a strategic construction of research methodologies, 8 *International Journal of Quantitative and Qualitative Research Methods* 1-23 (2020)

[8]Siedlecki, S. L., Understanding descriptive research designs and methods, 34 *Clinical Nurse Specialist* 8-12 (2020)

[9]Taherdoost, H. Data collection methods and tools for research; a step-by-step guide to choose data collection technique for academic and business research projects, 10 *International Journal of Academic Research in Management (IJARM)* 10-38 (2021)

[10]Rahman, M. M., Tabash, M. I., Salamzadeh, A., Abduli, S., & Rahaman, M. S., Sampling techniques (probability) for quantitative social science researchers: a conceptual guidelines with examples, 17 *Seeu Review* 42-51 (2022)

VI. Findings And Discussion

Findings reveal that IP management significantly sustains and fosters an innovation ecosystem, with IP rights protecting assets and supporting R&D for organizational innovation. Respondents indicated that IP management facilitates collaboration, monetization, and competition within the innovation landscape. A strong correlation between IP enforcement and innovation fostering was identified, underscoring IP management's role in promoting a culture of innovation. The study concludes that IP management systems play a vital role in strengthening an innovation ecosystem, but policy reviews are necessary to maintain the effectiveness of IP protections.

Primary quantitative analysis

Descriptive statistics

		1. What is your gender?	2. What is your age?	3. Innovation ecosystem is improved with the engagement of skilled and experienced employees	4. Strategic role of IP management helps to develop incentivising investment of the companies
N	Valid	71	71	71	71
	Missing	0	0	0	0
Mean		1.39	2.55	3.63	3.79
Median		1.00	3.00	4.00	4.00
Mode		1	3	4	5
Std. Deviation		.492	.907	1.312	1.319
Skewness		.442	-.032	-.965	-.673
Std. Error of Skewness		.285	.285	.285	.285
Kurtosis		-1.858	-.742	-.260	-1.019
Std. Error of Kurtosis		.563	.563	.563	.563

Statistics

		5. Strategic role of IP management is valuable for the firms to improve competitive advantage	6. Patent protection is valuable for the firms to develop relationships between IP management and entrepreneurship	7. Patent protection helps to generate innovative assets of an industry	8. Open-source licensing helps to modify IP laws and create innovative works in an industry
N	Valid	71	71	71	71
	Missing	0	0	0	0
Mean		3.62	3.37	3.45	3.65
Median		4.00	4.00	4.00	4.00
Mode		4	5	5	4
Std. Deviation		1.269	1.495	1.462	1.321
Skewness		-.708	-.367	-.465	-.732
Std. Error of Skewness		.285	.285	.285	.285
Kurtosis		-.577	-1.398	-1.249	-.757
Std. Error of Kurtosis		.563	.563	.563	.563

Statistics

		9. Open-source licensing is valuable for the companies to promote transparency, collaboration, and innovation	10. Trademark protection is beneficial for the companies to improve innovation and creativity in the workplace	11. Trademark protection helps an organisation to differentiate it from other companies	12. Innovation workshops focus on technological innovation and novel solutions in the workplace
N	Valid	71	71	71	71
	Missing	0	0	0	0
Mean		3.46	3.63	3.44	3.80
Median		4.00	4.00	4.00	4.00
Mode		4[a]	5	4	5
Std. Deviation		1.452	1.376	1.370	1.420
Skewness		-.518	-.728	-.498	-.933
Std. Error of Skewness		.285	.285	.285	.285
Kurtosis		-1.198	-.781	-1.120	-.596
Std. Error of Kurtosis		.563	.563	.563	.563

Statistics

		13. Innovation workshops are helpful for an industry to foster organisational creativity
N	Valid	71

Missing	0
Mean	3.66
Median	4.00
Mode	5
Std. Deviation	1.424
Skewness	-.781
Std. Error of Skewness	.285
Kurtosis	-.813
Std. Error of Kurtosis	.563

Table 1: Descriptive statistics
(Source: IBM-SPSS)

Descriptive statistics is one type of statistical analysis and it helps to analyse the central tendency of the dataset in the study. "Mean", "median", and "mode" values of the dataset are calculated and analysed through the method. Centre point of dataset is identified through descriptive statistics and it is referred to as the "mean value" of dataset in the statistical analysis. The average value of the dataset is represented with the help of "mean value". The "midpoint of a data set" is analysed with the impact of "median value" in "descriptive statistics". The highest mean value of the dataset is 3.80 and the lowest mean value is 3.37 among all variables. Hence, it can be said that innovation workshops and innovation ecosystems are connected with each other.

Correlation

Correlations

		3. Innovation ecosystem is improved with the engagement of skilled and experienced employees	4. Strategic role of IP management helps to develop incentivising investment of the companies	5. Strategic role of IP management is valuable for the firms to improve competitive advantage	6. Patent protection is valuable for the firms to develop relationships between IP management and entrepreneurship	7. Patent protection helps to generate innovative assets of an industry	8. Open-source licensing helps to modify IP laws and create innovative works in an industry	9. Open-source licensing is valuable for the companies to promote transparency, collaboration, and innovation
3. Innovation ecosystem is improved with the engagement of skilled and experienced employees	Pearson Correlation	1	.665**	.473**	.419**	.348**	.526**	.593**
	Sig. (2-tailed)		.000	.000	.000	.003	.000	.000
	N	71	71	71	71	71	71	71
4. Strategic role of IP management helps to develop incentivising investment of the companies	Pearson Correlation	.665**	1	.540**	.547**	.183	.498**	.537**
	Sig. (2-tailed)	.000		.000	.000	.126	.000	.000
	N	71	71	71	71	71	71	71
5. Strategic role of IP management is valuable for the firms to improve competitive advantage	Pearson Correlation	.473**	.540**	1	.534**	.440**	.643**	.376**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.001
	N	71	71	71	71	71	71	71
6. Patent protection is valuable for the firms to develop relationships between IP management and entrepreneurship	Pearson Correlation	.419**	.547**	.534**	1	.538**	.478**	.394**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.001
	N	71	71	71	71	71	71	71

7. Patent protection helps to generate innovative assets of an industry	Pearson Correlation	.348**	.183	.440**	.538**	1	.401**	.317**
	Sig. (2-tailed)	.003	.126	.000	.000		.001	.007
	N	71	71	71	71	71	71	71
8. Open-source licensing helps to modify IP laws and create innovative works in an industry	Pearson Correlation	.526**	.498**	.643**	.478**	.401**	1	.541**
	Sig. (2-tailed)	.000	.000	.000	.000	.001		.000
	N	71	71	71	71	71	71	71
9. Open-source licensing is valuable for the companies to promote transparency, collaboration, and innovation	Pearson Correlation	.593**	.537**	.376**	.394**	.317**	.541**	1
	Sig. (2-tailed)	.000	.000	.001	.001	.007	.000	
	N	71	71	71	71	71	71	71
10. Trademark protection is beneficial for the companies to improve innovation and creativity in the workplace	Pearson Correlation	.502**	.618**	.369**	.518**	.417**	.494**	.523**
	Sig. (2-tailed)	.000	.000	.002	.000	.000	.000	.000
	N	71	71	71	71	71	71	71
11. Trademark protection helps an organisation to differentiate it from other companies	Pearson Correlation	.400**	.305**	.409**	.388**	.428**	.520**	.621**
	Sig. (2-tailed)	.001	.010	.000	.001	.000	.000	.000
	N	71	71	71	71	71	71	71
12. Innovation workshops focus on technological innovation and novel solutions in the workplace	Pearson Correlation	.382**	.389**	.291*	.391**	.422**	.297*	.467**
	Sig. (2-tailed)	.001	.001	.014	.001	.000	.012	.000
	N	71	71	71	71	71	71	71
13. Innovation workshops are helpful for an industry to foster organisational creativity	Pearson Correlation	.430**	.266*	.426**	.294*	.486**	.452**	.374**
	Sig. (2-tailed)	.000	.025	.000	.013	.000	.000	.001
	N	71	71	71	71	71	71	71

Correlations

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6. Patent protection is valuable for the firms to develop relationships between IP management and entrepreneurship	Pearson Correlation	.518**	.388**	.391**	.294*
	Sig. (2-tailed)	.000	.001	.001	.013
	N	71	71	71	71
7. Patent protection helps to generate innovative assets of an industry	Pearson Correlation	.417**	.428**	.422**	.486**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	71	71	71	71
8. Open-source licensing helps to modify IP laws and create innovative works in an industry	Pearson Correlation	.494**	.520**	.297*	.452**
	Sig. (2-tailed)	.000	.000	.012	.000
	N	71	71	71	71
9. Open-source licensing is valuable for the companies to promote transparency, collaboration, and innovation	Pearson Correlation	.523**	.621**	.467**	.374**
	Sig. (2-tailed)	.000	.000	.000	.001
	N	71	71	71	71
10. Trademark protection is beneficial for the companies to improve innovation and creativity in the workplace	Pearson Correlation	1	.359**	.540**	.549**
	Sig. (2-tailed)		.002	.000	.000
	N	71	71	71	71
11. Trademark protection helps an organisation to differentiate it from other companies	Pearson Correlation	.359**	1	.566**	.553**
	Sig. (2-tailed)	.002		.000	.000
	N	71	71	71	71
12. Innovation workshops focus on technological innovation and novel solutions in the workplace	Pearson Correlation	.540**	.566**	1	.525**
	Sig. (2-tailed)	.000	.000		.000
	N	71	71	71	71
13. Innovation workshops are helpful for an industry to foster organisational creativity	Pearson Correlation	.549**	.553**	.525**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	71	71	71	71

Table 2: Correlation Statistics
(Source: IBM-SPSS)

Correlations among variables are identified through statistical analysis and it is valuable for the study to analyse "pearson correlation value". The highest "pearson correlation value" is 0.665 which is close to +1 in the study. The value between innovation ecosystems, and the strategic role of IP management is the highest value. Hence it can be stated that these two elements are correlated with each other. "Patent protection" and "innovation ecosystem" are associated with each other by correlation value of 0.419 in the study and it denotes positive

correlation. “Open-source licensing” and “innovation ecosystems” are correlated with positive correlation by the value 0.593. These two elements are associated with each other in strategic management of an ecosystem of innovation. “Trademark protection” and “innovation ecosystem” are linked with each other by 0.502, a positive correlation in the study. “Innovation workshops” and "innovation workshops” have “pearson correlation” value by 0.430 and it denotes positive correlation between these variables in the thesis paper.

Regression

Model Summary[b]							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.678[a]	.460	.444	.978	.460	28.954	2

Model Summary[b]		
Model	Change Statistics	
	df2	Sig. F Change
1	68	.000

Table 3: Model summary between innovation ecosystems and strategic role of IP management
(Source: IBM-SPSS)

Innovation ecosystems and the strategic role of IP management are associated with each other in the study with the highest R value and R-square value in the study. The R value of these two factors is 0.678 and R-square value is 0.460 and it helps to develop an ecosystem of innovation in an industry. R value lies between +1 to -1 and it denotes positive and negative correlation respectively. The R-value is more than -1 and less than +1 and a positive correlation is developed between these two factors in the study. These two variables are attached successfully through high R-value and R-square value here. It is valuable for the study to maintain a strong relationship between these two variables in the study.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.411	2	27.705	28.954	.000[b]
	Residual	65.068	68	.957		
	Total	120.479	70			

Table 4: ANOVA test between innovation ecosystems and strategic role of IP management
(Source: IBM-SPSS)

ANOVA test is associated with “regression”, and “residual” value in the study. Sig value and F value are valuable for ANOVA test. The F-value of these variables is highest among other elements by 28.954 and it is a positive value and helps to maintain a strategic correlation between two variables. Sig value is 0.000 and it is the significant value for variables in the study.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.855	.399		2.146	.035
	4. Strategic role of IP management helps to develop incentivising investment of the companies	.574	.105	.578	5.454	.000
	5. Strategic role of IP management is valuable for the firms to improve competitive advantage	.166	.109	.161	1.520	.133

Coefficients[a]			
Model		95.0% Confidence Interval for B	
		Lower Bound	Upper Bound
1	(Constant)	.060	1.651
	4. Strategic role of IP management helps to develop incentivising investment of the companies	.364	.784
	5. Strategic role of IP management is valuable for the firms to improve competitive advantage	-.052	.385

Table 5: Coefficients between innovation ecosystems and strategic role of IP management
(Source: IBM-SPSS)

Coefficients between two variables are identified through t value and sig value in the study. It is valuable for the thesis to maintain a strong relationship between these two variables. The strategic role of IP management has the highest t-value and sig value. Sig value is 5.454 and sig value is 0.000. It can be understood that these two variables' innovation ecosystem and strategic role of IP management are associated with each other and maintain a strong relationship between these two variables.

Graphical analysis

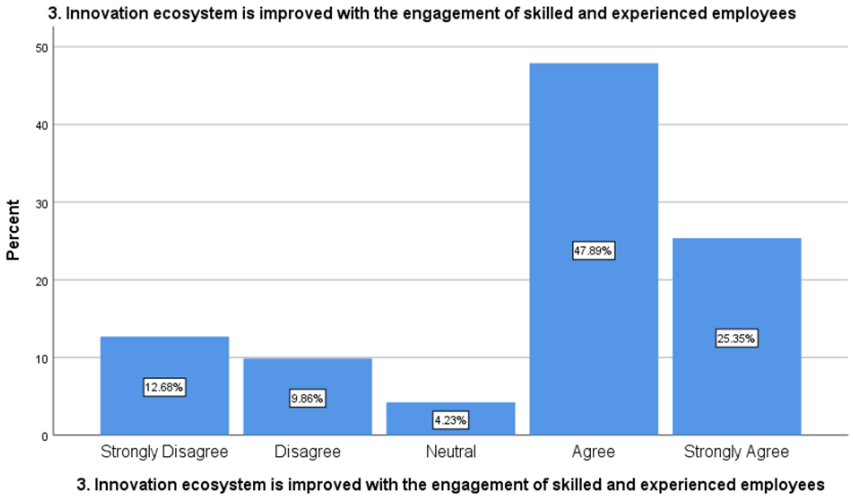

Figure 2: Importance of innovation ecosystem to enhance engagement of employees
(Source: IBM-SPSS)

The above picture showcases the importance of the innovation ecosystem in an industry and it helps to enhance the engagement of employees during working hours. Among 71 survey participants, 47.9% and 25.4% of individuals agreed and strongly agreed with the above statement respectively. Innovation ecosystem is valuable for an industry to enhance engagement of skilled and experienced employees in the workplace[11].These individuals can improve their skills and knowledge based on working requirements. Innovation ecosystem helps to maintain tax incentives and regulatory framework in an industry.

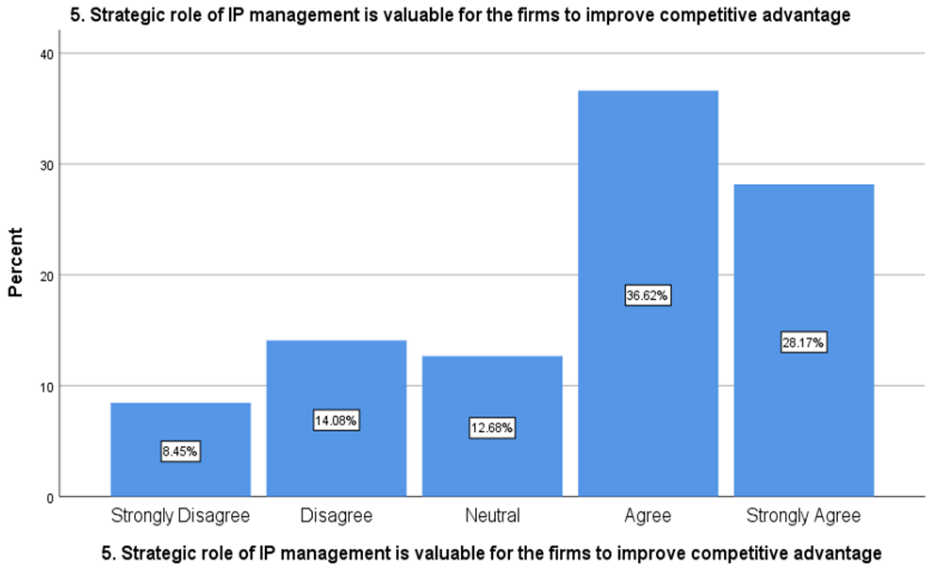

Figure 3: Necessity of IP management to improve competitive advantages
(Source: IBM-SPSS)

The above graph analyses importance of IP management for developing competitive advantages in the study. Most individuals agreed with the above statement in the study by 36.6% among 71 participants. More than 28% of people strongly agreed with the necessity of IP management in the workplace. About 14% of individuals disagreed with the statement in the study as these managers are new in the workplace. Adequate experiences are not available among these managers.

[11]Popo-Olaniyan, O., James, O.O., Udeh, C.A., Daraojimba, R.E. and Ogedengbe, D.E., Review of advancing US innovation through collaborative hr ecosystems: a sector-wide perspective, 4 *International Journal of Management & Entrepreneurship Research* 623-640 (2022)

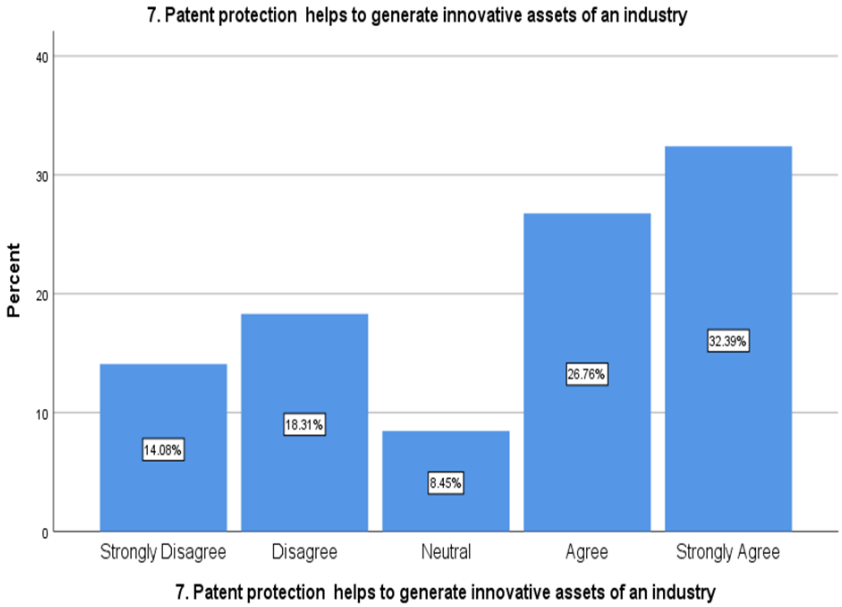

Figure 4: Creation of innovative assets through patent protection
(Source: IBM-SPSS)

The above graphical representation indicates creation of innovative assets by patent protection. Among 71 participants, more than 32% of individuals strongly agreed and 26.8% participants agreed with the above statement. Asset creation is profitable and valuable for the companies through patent protection[12]. It is valuable for the study to develop profitability and productivity of an industry successfully. About 19% of individuals disagreed with the statement and it is valuable to improve business opportunities and innovation effectively.

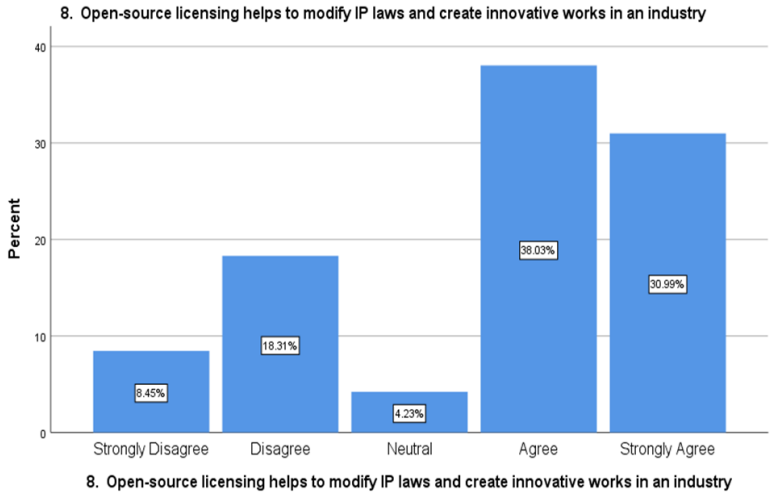

Figure 5: Importance of open-source licensing to modify IP laws
(Source: IBM-SPSS)

Open-source licensing is valuable for the company to modify IP laws and implement innovative strategies in the workplace. It helps to improve business objectives and values among competitors and improve profitability successfully. More than 38% of individuals agreed with the necessity of open-source licensing and about 31% of participants strongly agreed with the above statement. It is valuable for the companies to develop business opportunities and values among competitors in the global market. Open-source licensing is essential for an industry to develop business opportunities in the competitive market.

[12]Dosso, M. and Vezzani, A., Firm market valuation and intellectual property assets, 27 *Industry and Innovation* 705-729 (2020)

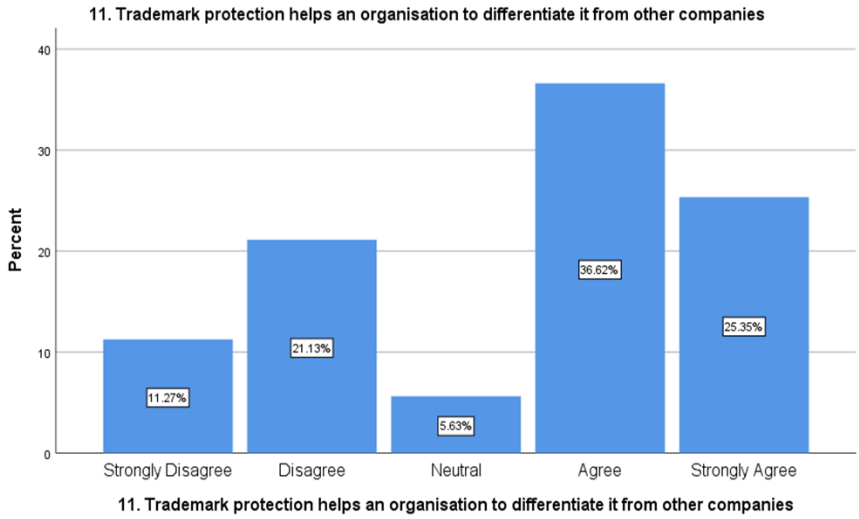

Figure 6: Importance of trademark protection for an industry
(Source: IBM-SPSS)

The above graph represents the necessity of trademark protection for an industry to develop business opportunities in the market. Trademark protection is valuable for an organisation to be one step ahead of its competitors. It is valuable for an industry to develop competitiveness in the global market. More than 36% of people agreed with the above statement and about 25.4% of people strongly agreed with the importance of trademarks in an industry and it helps to differentiate an industry from others. More than 5% of individuals are confused with the importance of trademark protection in the global market. These individuals have no idea about trademark protection of an industry.

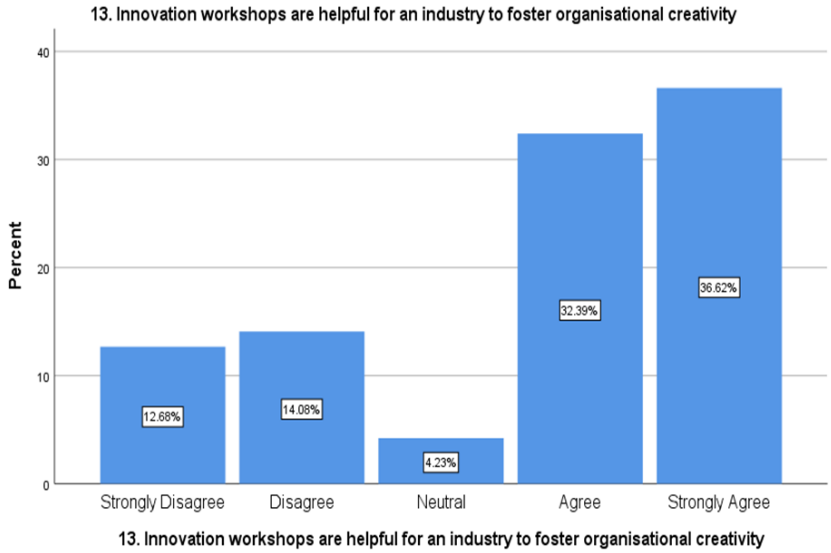

Figure 7: Improvement of organisational creativity through innovation workshops
(Source: IBM-SPSS)

The above graph represents improvement of organisational creativity through innovation work and it is valuable to develop business opportunities and values in the global market. Innovative workshops are beneficial for an industry to improve competitive advantages and business opportunities among competitors. It is valuable for the industry to develop organisational creativity in the global market. More than 36% of people strongly agreed with the improvement of organisational creativity through innovation workshops. About 32.4% of participants agreed with the above statement. It is valuable to develop business opportunities effectively.

VII. Conclusion

Innovation ecosystem is valuable for the company to develop competitive advantages and business opportunities in the global market. Different types of activities such as innovation encouragement, competitive advantage, risk management, maintaining investment strategies, improving market positioning, maintaining secrecy, and identifying collaborative opportunities are improved with the impact of an ecosystem innovation. It is valuable for an industry to develop business values and opportunities in the global market. A strong IP portfolio helps the company to improve its competitiveness and it is valuable for the firm to lead high market share and engage loyal customers effectively. A strong customer base is maintained by an organisation through IP management and it is valuable to achieve highly competitive advantages during working hours. The companies get an opportunity to develop business opportunities and values in the workplace and it is helpful to foster marketing opportunities among other competitors throughout the globe.

Workplace innovation and competitiveness of the firms are improved with the help of an ecosystem innovation and it helps to foster innovation and creativity in the workplace. It is valuable for the industry to develop business values. Innovation ecosystem and technological up gradation are correlated with each other and it helps to develop profitability and productivity in the global market. Companies try to align strategic positioning with innovation ecosystems through adaptation of Industry 4.0 and it is essential for the firms to improve business opportunities and values among competitors in the workplace. IP management is valuable for the companies to improve employee engagement and productivity successfully. The business opportunities of the companies are improved with the impact of an ecosystem innovation globally.

Bibliography

[1]. Matt, D. T., Molinaro, M., Orzes, G., & Pedrini, G., The Role Of Innovation Ecosystems In Industry 4.0 Adoption, 32 Journal Of Manufacturing Technology Management 369-395 (2021)
[2]. Visscher, K., Hahn, K., & Konrad, K., Innovation Ecosystem Strategies Of Industrial Firms: A Multilayered Approach To Alignment And Strategic Positioning, 30 Creativity And Innovation Management 619-631 (2021)
[3]. Park, Y. S., Konge, L., & Artino Jr, A. R., The Positivism Paradigm Of Research, 95 Academic Medicine 690-694 (2020)
[4]. Park, D., Bahrudin, F. I., & Han, J., Circular Reasoning For The Evolution Of Research Through A Strategic Construction Of Research Methodologies, 8 International Journal Of Quantitative And Qualitative Research Methods 1-23 (2020)
[5]. Siedlecki, S. L., Understanding Descriptive Research Designs And Methods, 34 Clinical Nurse Specialist 8-12 (2020)
[6]. Taherdoost, H. Data Collection Methods And Tools For Research; A Step-By-Step Guide To Choose Data Collection Technique For Academic And Business Research Projects, 10 International Journal Of Academic Research In Management (IJARM) 10-38 (2021)
[7]. Rahman, M. M., Tabash, M. I., Salamzadeh, A., Abduli, S., & Rahaman, M. S., Sampling Techniques (Probability) For Quantitative Social Science Researchers: A Conceptual Guidelines With Examples, 17 Seeu Review 42-51 (2022)
[8]. Reis, D., Moura, F., & Aragão, I., Entrepreneurship, Intellectual Property And Innovation Ecosystems, 9 International Journal For Innovation Education And Research 108-134 (2021)
[9]. Abdin, J., Sharma, A., Trivedi, R., & Wang, C., Financing Constraints, Intellectual Property Rights Protection And Incremental Innovation: Evidence From Transition Economy Firms, 198 Technological Forecasting And Social Change 122982 (2024)
[10]. Häyry, M., Just Better Utilitarianism, 30 Cambridge Quarterly Of Healthcare Ethics 343-367 (2021)
[11]. Dosso, M. And Vezzani, A., Firm Market Valuation And Intellectual Property Assets, 27 Industry And Innovation 705-729 (2020)
[12]. Popo-Olaniyan, O., James, O.O., Udeh, C.A., Daraojimba, R.E. And Ogedengbe, D.E., Review Of Advancing US Innovation Through Collaborative Hr Ecosystems: A Sector-Wide Perspective, 4 International Journal Of Management & Entrepreneurship Research 623-640 (2022)