

Employee learning and development, workforce outcome, and talent retention among internet of thing industries: Basis for workforce satisfaction framework

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Abstract

In the rapidly evolving landscape of the Internet of Things (IoT) industries, the ability to attract, develop, and retain top talent has become increasingly critical for sustaining competitive advantage. As technological advancements drive the proliferation of connected devices and intelligent systems, organizations within the IoT sector face unique challenges in managing their human resources. Moreover, effective learning and development strategies are essential for talent retention, as they foster an environment of continuous growth and engagement, reducing turnover rates and securing the long-term success of the organization. This paper explores the relationship between employee learning and development, work outcomes, and talent retention in the context of the IoT industry, offering insights into how these elements interplay to shape organizational performance and sustainability. The study used descriptive type of research employing 400 employees from five enterprises in Beijing, China in the IoT industry as a rapidly growing and changing industry. The findings showed that while IoT companies have a positive foundation for employee learning and development, there is a need to enhance these programs to improve key workforce outcomes like adaptability, digital literacy, and data-driven decision-making. Strengthening employer branding, career development opportunities, and work environments are crucial for talent retention. The significant relationships between learning, work outcomes, and retention indicate that a holistic approach to employee development can lead to a more capable, satisfied, and committed workforce. Additionally, the implementation of a tailored workforce satisfaction framework provides a strategic tool for improving employee engagement and retention in the IoT sector.

Keywords: employee learning and development, work outcomes, talent retention, internet of thing industries, workforce satisfaction framework

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1. Introduction

Human Resource (HR) professionals are tasked with finding candidates who possess the right education, skills, and experience for job openings. Hiring the right employees is crucial to the success of any organization. Employers who invest time, energy, and resources into finding the right candidates reap significant benefits. No employer intentionally hires poorly suited candidates, as doing so can have negative consequences. Selecting the right employees from the start helps avoid issues like employee burnout and reduces safety risks. Rushed hiring decisions, especially those involving inexperienced or unqualified candidates, can increase workplace hazards due to a lack of experience, maturity, or care for the job.

Moreover, hiring the right employees reduces overall recruitment costs by minimizing the need for constant rehiring and replacing under-performing staff. This leads to greater productivity, less time spent on recruitment, and more effective hires. Maintaining high employee morale and a strong company culture also depends on adding new hires who align with and positively contribute to the organization. In the long run, companies that prioritize hiring the right fit are better positioned for sustained growth and profitability (Skillwork, 2023). Hiring the appropriate people helps a business maintain knowledgeable and effective staff while reducing attrition. When unemployment is low and there is more competition for talent, employers are especially interested in keeping their workforce. An organization's ability to retain talent is a sign of its success. A company looks at the percentage of employees who stayed with them for a set amount of time to determine if they are retaining talent. A company with a 90% retention rate and a 10% employee turnover rate, for instance, would retain eight out of ten workers in a single year.

Retaining talent is crucial for organizations because it fosters a stable environment and helps lower turnover rates. It also serves as an indicator of employee satisfaction. When turnover occurs, companies must redistribute job duties among remaining employees and invest time in recruiting new candidates. This process can be costly, not only in terms of hiring but also due to the loss of productivity during training. Additionally, a cohesive team atmosphere is essential for retention; frequent departures can make it difficult for employees to form strong relationships. Talent retention boosts company performance by cultivating experienced staff and in-house experts. Key benefits include improving company culture, enhancing customer experience, increasing revenue, fostering employee engagement and satisfaction, and building a positive company reputation (Indeed.com, 2023). To be able to retain satisfied employees, some organizations use human resources technology for recruiting, onboarding, engaging and recognizing workers, as well as offering more work flexibility and modern benefits like physical and financial wellness programs. Other organizational strategies include cultivating a happy work and satisfied environment that encourages participation, expressing gratitude to staff members, offering competitive compensation and benefits, and supporting a healthy work-life balance (SHRO, 2023)

As more foreign businesses establish operations in China and local businesses grow, the job market in that country has exploded in the last several years. Companies are fighting to hold on to employees with transferable skills, since they have become a prized resource. Competition for highly sought-after technical and leadership skills continues to rage on. Many organizations have begun to turn to more creative methods to attract the talent they need while retaining the talent they have. Therefore, it is easily concluded that the talent war is won by the company that can effectively develop, satisfies and retain its best people (Tuua, 2013).

Internet of Things (IoT) represents a 'third wave' revolution in Information Technology. The IoT is already beginning to re-shape many things from customer experience, product design to business models. Any business will be a technology company, regardless of its industry, offerings, or offerings. In the market, start-ups will

grow more quickly and pose a serious threat. With their inventive business ideas and values predicated on projected future development, start-ups are positioned to flourish quickly in this specific market. Asia, and China in particular, missed the previous technologically-driven boom periods. Nonetheless, Asian businesses have demonstrated tremendous success and tremendous promise in this new era of IoT and start-ups. Additionally, this has built a solid foundation for collaboration between East and West enterprises. In the 2015 State of the CIO study, conducted by CIO.com, 56% of CIOs stated that they anticipate an IT skills shortage in the upcoming years. Since they will be competing not just with other IT companies but also with companies in other sectors, IoT companies will need to put in more effort to attract, motivate, and retain people. In the end, the discussion will center on how fascinating the work is, as well as chances for professional growth, learning, and rewards. Innovative incentive schemes that can link the rewards program itself to the organization's DNA will be necessary.

An organization needs a strong human resource base in order to succeed. The human resource is the primary engine of a business, particularly in technology businesses, where the company's growth is contingent upon the talents, motivation, and caliber of work produced by its employees. When they are unhappy with their occupations, employees frequently change them. A variety of things could influence an employee's degree of job satisfaction. The dynamic nature of the information technology (IT) sector has a significant influence on how satisfied IT personnel are with their jobs. It is simple for a business to act quickly to increase employee work happiness when it has the ability to predict employee job satisfaction. PwC's latest global workforce survey shows that, in a fast-moving sector, like IoT industries, job satisfaction doesn't always lead to retention. Because tech-savvy individuals are in high demand across all businesses, not just their own, labor market pressures may also play a role. Professionals in the computer sector still have more career options than those in other areas, even though some major businesses are cutting back on staff. Whichever way, tech executives have a clear issue. With this present problem in the IoT industry globally, the research explored the factors that affect the overall employees satisfaction in the IoT industry such as learning and development, work outcome and talent retention. The researcher believe that these factors are very important foundation that should look into by many IoT companies to be able to identify what makes employees stay and what makes them leave the organization.

Objectives of the Study - The study aimed to examine the employee learning and development, work outcomes and talent retention among Internet of Things Industries in China that will be the basis in developing a workforce satisfaction framework. Specifically, it: assessed the employee learning and development as to cost effectiveness, alignment with organizational goals, and sustainability; described the workforce outcomes in terms of adaptability and agility, digital literacy and fluency, and data-driven decision making; determined the talent retention as to employer brand, career development opportunities and work environment; tested the significant relationship between employee learning and development, work outcome and talent retention; and developed a workforce satisfaction framework for Internet Of Things industries.

2. Methods

Research Design - This study used the Descriptive Methods of research. Descriptive research design is a scientific method which involves observing and describing the existing phenomenon. It aims to accurately and systematically describe a population, situation or phenomenon. Thus, the profile of the respondents in terms of sex, age, civil status, position, educational attainment and length of service were described. A questionnaire will be used in determining the various employee retention factors such as employee engagement, professional development and organizational culture as basis in the development of talent retention strategies among automotive companies in Beijing, China. In addition, the study will use correlation methods to test the significant difference and relationship among the three (3) variables in the study.

Participants of the Study - The study used 400 employees from five enterprises which belong to Internet of Things industry. The five enterprises are in Beijing, China. The IoT industry is a rapidly growing and changing industry. As the IoT continues to evolve, employees in this industry need to be able to learn new skills and adapt

to new technologies. The respondents were Managers, Supervisors and Staff who are connected with IoT companies for at least one year onwards.

Data Gathering Instrument - This study made use of the self-structured questionnaire as the instrument to collect data. The questionnaire is composed of four (4) parts. Part I includes the demographic profile of the respondents; Part II are the learning and development indicators in terms of cost effectiveness, alignment with organizational goals and sustainability; Part III are items on workforce outcome in terms of adaptability and agility, digital literacy and fluency and data-driven decision making; and Part IV are the employee retention indicators in terms employer brand, career development opportunities and work environment.

Table 1

Reliability Summary Table – Employee Learning and Development, Work Outcome and Talent Retention

Indicators	Cronbach Alpha	Remarks
Employee Learning and Development, Work Outcome and Talent Retention	.985	Excellent
Per variable		
Employee Learning and Development	.952	Excellent
cost effectiveness	.778	Acceptable
alignment with organizational goals	.925	Excellent
sustainability	.924	Excellent
Work Outcome	.975	Excellent
adaptability and agility	.958	Excellent
digital literacy and fluency	.942	Excellent
data-driven decision making	.975	Excellent
Talent Retention	.970	Excellent
employer brand	.914	Excellent
career development opportunities	.938	Excellent
work environment	.945	Excellent

George and Mallery (2003) provide the following rules of thumb: “_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and _ < .5 – Unacceptable”

Based on result, the Employee Learning and Development, Work Outcome and Talent Retention Instrument has an Excellent consistency as exhibited by the Cronbach’s Alpha value of (.985). This was validated by the Excellent remark from Employee Learning and Development (.952); it was confirmed by the Acceptable result from cost effectiveness (.778), and excellent result from alignment with organizational goals (.925), and sustainability (.924); Also, it was validated by the Excellent remark from Work Outcome (.942); it was confirmed by the Excellent results from adaptability and agility (.958), digital literacy and fluency (.942), and data-driven decision making (.975). It was further validated by the Excellent remarks from Talent Retention (.970); it was confirmed by the Excellent results from employer brand (.914), career development opportunities (.938), and work environment (.945); which shows that the instrument at hand passed the reliability index test. Thus, the researcher can now proceed to the actual survey using the aforementioned instrument.

Data Gathering Procedure - Industry and academic specialists were consulted to validate the questionnaire. A reliability analysis using Cronbach alpha was performed on the collected replies. The questionnaire then sent to the intended respondents after the researcher requested permission from the general manager or owner of the car businesses. The questionnaire were distributed using Google Forms, at the general manager's choice. The assurance of complete confidentiality and exclusive use of the data collected for this study is provided to respondents.

Data Analysis - The following statistical tools were used in this study. Frequency and percentage distribution were used to describe the respondents, weighted mean and ranking were used to assess the employee engagement, performance management and rewards and recognition. Spearman will be used to test the significant relationship between and among the three (3) variables of the study. The Likert Scale will be used in assessing the variables. The following norms for interpretation were used in the study. 3.25-4.00 = Strongly Agree; 2.50-3.24 = Agree; 1.75-2.49 = Disagree and 1.00 -1.74 Strongly Disagree.

Ethical Considerations - In order to acquire informed consent, respondents were provided with suitable instructions regarding the aim of the study, the nature of their involvement, and the intended use of the data. The researcher will take strict precautions to guarantee that the answers provided by each individual respondent to the questionnaire will be kept private and not shared with third parties or used for other reasons.

3. Results and discussion

Table 2

Summary Table on Employee Learning and Development

Key Result Indicators	Composite Mean	VI	Rank
Cost Effectiveness	3.40	Agree	1
Alignment with organizational goals	3.35	Agree	2.5
Sustainability	3.35	Agree	2.5
Composite Mean	3.37	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 2 shows the summary of the assessment on the perception of the employees on learning and development t. It has a grand composite mean of 3.37 with a verbal interpretation of agree. This indicates that, on average, employees agree with the positive statements about the L&D programs. This suggests a generally favorable perception of the L&D initiatives within the organization. This summary highlights that the employees find the L&D programs to be meeting their needs and contributing positively to their professional development and job performance. As gleaned from the table, the highest assessed is cost effectiveness with have 3.40 composite mean followed by the alignment with organizational goals and sustainability with a composite mean of both 2.5. This summary highlights that while employees recognize the cost-effectiveness of the L&D programs, there is room for improvement in aligning these programs more closely with organizational goals and enhancing their sustainability.

Table 3

Summary Table on Workforce Outcome

Key Result Areas	Composite Mean	VI	Rank
Adaptability and Agility	3.29	Agree	1.5
Digital Literacy and Fluency	3.28	Agree	3
Data Driven Decision Making	3.29	Agree	1.5
Grand Composite Mean	3.29	Agree	

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 3 shows the summary of the assessment workforce outcome. The grand composite means of 3.29 suggests that the respondents agree that the workforce demonstrates a generally good level of capability in Adaptability and Agility, Digital Literacy and Fluency, and Data-Driven Decision Making. As gleaned from the table, the highest assessed indicator is data driven decision making and data driven decision making with have both a composite mean of 3.29. This is followed by digital literacy and fluency with a composite mean of 3.28 which suggests that the respondents agree.

Table 4

Summary Table on Talent Retention

Key Result Areas	Composite Mean	VI	Rank
Employer Brand	3.29	Agree	3
Career Development Opportunities	3.33	Agree	1
Work Environment	3.31	Agree	2
Grand Composite Mean	3.31		

Legend: 3.50-4.00=Strongly Agree; 2.50-3.49=Agree; 1.50-2.49=Disagree; 1.00-1.49=Strongly Disagree

Table 4 shows the summary of the assessment on talent retention with a grand composite mean of 3.31 with

a verbal interpretation of agree. As gleaned from the table, the highest assessed indicator is career development opportunities with a composite mean of 3.33, this is followed by work environment (3.31) and employer brand with a composite mean of 3.29. Organizations that foster these three factors are more likely to retain employees. Talent retention refers to the ability of an organization to retain its talented and skilled employees over time. It is a critical aspect of organizational success, as retaining top talent contributes to stability, continuity, and productivity within the workforce.

Table 5*Relationship Between Employee Learning and Work Outcome*

Variables	Rho	p-value	Interpretation
Cost Effectiveness			
Adaptability and Agility	.735**	< .001	Highly Significant
Digital Literacy and Fluency	.739**	< .001	Highly Significant
Data Driven Decision Making	.711**	< .001	Highly Significant
Alignment with Organizational Goals			
Adaptability and Agility	.803**	< .001	Highly Significant
Digital Literacy and Fluency	.776**	< .001	Highly Significant
Data Driven Decision Making	.731**	< .001	Highly Significant
Sustainability			
Adaptability and Agility	.843**	< .001	Highly Significant
Digital Literacy and Fluency	.825**	< .001	Highly Significant
Data Driven Decision Making	.797**	< .001	Highly Significant

** . Correlation is significant at the 0.01 level

As seen in the table, the computed rho-values ranging from 0.711 to 0.843 indicate a moderate to strong direct relationship among the sub variables of employee learning and work outcome. There was a statistically significant relationship between employee learning and development and work force outcome because the obtained p-values were less than 0.01. A strong correlation exists between employee L&D and positive workforce outcomes. By investing in L&D programs, organizations can equip their workforce with the skills and knowledge needed to thrive, ultimately achieving greater success and a competitive advantage.

Table 6*Relationship Between Employee Learning and Talent Retention*

Variables	rho	p-value	Interpretation
Cost Effectiveness			
Employer Brand	.677**	< .001	Highly Significant
Career Development Opportunities	.725**	< .001	Highly Significant
Work Environment	.702**	< .001	Highly Significant
Alignment with Organizational Goals			
Employer Brand	.722**	< .001	Highly Significant
Career Development Opportunities	.763**	< .001	Highly Significant
Work Environment	.740**	< .001	Highly Significant
Sustainability			
Employer Brand	.762**	< .001	Highly Significant
Career Development Opportunities	.813**	< .001	Highly Significant
Work Environment	.793**	< .001	Highly Significant

** . Correlation is significant at the 0.01 level

As seen in the table, the computed rho-values ranging from 0.677 to 0.813 indicate a moderate to strong direct relationship among the sub variables of employee learning and talent retention. There was a statistically significant relationship between employee learning and talent retention because the obtained p-values were less than 0.01. When employees feel their skills are constantly developing and they are learning new things, they perceive themselves as more valuable assets. This boosts their confidence and employability, both within your company and externally. However, if they feel stagnant, they might be more likely to seek opportunities that offer growth. Strong L&D programs create clear pathways for career advancement. By providing opportunities to develop the skills and knowledge needed for higher positions, it demonstrate a commitment to employee

growth within the company. This reduces the need for employees to look elsewhere for career progression.

Table 7

Relationship Between Work Outcome and Talent Retention

Variables	Rho	p-value	Interpretation
Adaptability and Agility			
Employer Brand	.799**	< .001	Highly Significant
Career Development Opportunities	.790**	< .001	Highly Significant
Work Environment	.781**	< .001	Highly Significant
Digital Literacy			
Employer Brand	.842**	< .001	Highly Significant
Career Development Opportunities	.829**	< .001	Highly Significant
Work Environment	.819**	< .001	Highly Significant
Data-Driven Decision Making			
Employer Brand	.870**	< .001	Highly Significant
Career Development Opportunities	.836**	< .001	Highly Significant
Work Environment	.848**	< .001	Highly Significant

** . Correlation is significant at the 0.01 level

As seen in the table, the computed rho-values ranging from 0.781 to 0.870 indicate a moderate to strong direct relationship among the sub variables work outcome and talent retention. There was a statistically significant relationship between work outcome and talent retention because the obtained p-values were less than 0.01. When employees see their work leading to positive results and contributing to the organization's success, they experience a sense of accomplishment and purpose. This boosts morale and fosters a feeling of being valued, reducing the desire to leave. Achieving positive work outcomes reinforces employees' skills and abilities. This bolsters their confidence and motivates them to continue striving for excellence. Feeling competent and motivated employees are more likely to stay with the company. Strong work outcomes often lead to opportunities for further growth and development. This could involve taking on additional responsibilities, leading new projects, or receiving promotions. Such opportunities demonstrate the organization's investment in employees' professional advancement, reducing turnover. Positive work outcomes can lead to a more positive and collaborative work environment. Employees feel their contributions are valued, fostering better teamwork and communication. A positive work environment increases overall employee satisfaction and reduces the likelihood of seeking new jobs. When employees are equipped with the necessary skills and resources to achieve success, they experience less stress and burnout. This creates a healthier work environment and reduces the risk of employees leaving due to feeling overwhelmed or undervalued.

Proposed Framework

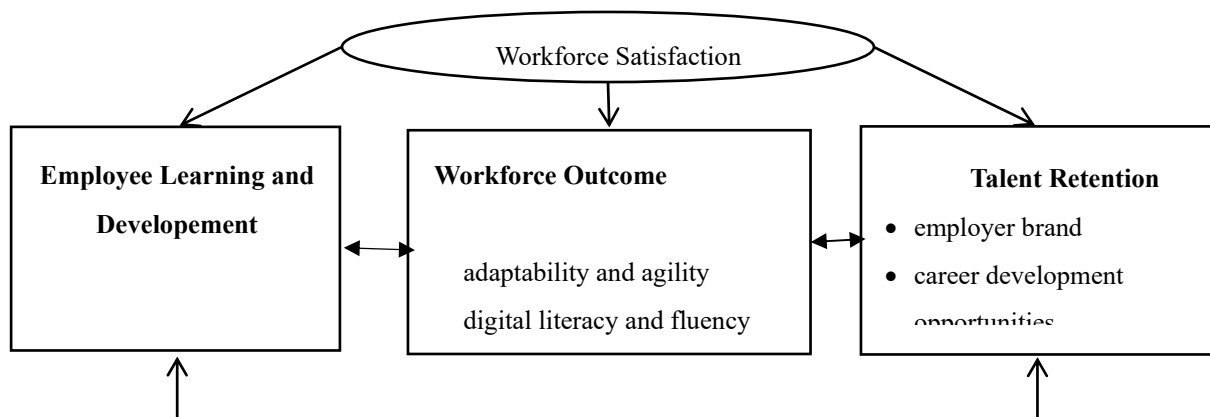


Figure 1. Workforce Satisfaction Framework

The Workforce Satisfaction Framework proposed by the researcher was based on the relationship among factors affecting workforce satisfaction such as employee learning and development, workforce outcome and

talent retention. This proposed framework describes how IoT industry can improve workforce satisfaction. There are highly significant relationships among employee learning and development (L&D), workforce outcomes, and talent retention. They all play a crucial role in driving workforce satisfaction. By prioritizing employee learning and development, fostering positive workforce outcomes, and focusing on talent retention strategies, organizations can create a work environment that fosters high levels of employee satisfaction. This satisfied workforce, in turn, contributes to increased productivity, innovation, and overall organizational success.

4. Conclusion and recommendations

Based on the results of the study, the following conclusions were drawn: The respondents moderately agreed that there is positive foundation for employee learning and development in the company. The respondent employees showed a generally average level of outcomes in the areas of adaptability & agility, digital literacy & fluency, and data-driven decision making. Employees generally agreed that employer brand, career development opportunities and work environment contributes to talent retention. There is highly significant relationships between employee learning and development, workforce outcomes and employee retention. A workforce satisfaction framework for Internet of Things companies was developed.

The company may promote long-term benefits of training programs to contribute to a sustainable learning culture. The company may conduct skills gap analysis to identify specific areas where employees need improvement in adaptability, agility, digital literacy, and data-driven decision making. The company may develop a strong employer value proposition (EVP) that communicates the unique benefits of working for the organization. The proposed workforce satisfaction framework may be adopted Internet of Things companies to retain employees. Future researchers may Explore the potential of using online learning platforms, virtual reality simulations, and other emerging technologies to deliver more effective training programs.

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