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## ORIGINAL ARTICLE

### Unravelling the Employee Retention Enigma in Semiconductor Industry: A Focus on Penang, Malaysia

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#### ABSTRACT

This study aims to investigate the relationship between five factors (employer branding strategy, salary and benefits, training and career development, job flexibility, and supervisor support) and employee retention in the semiconductor industry in Penang, Malaysia. Data was gathered using questionnaires distributed via email and social media and was analysed. Based on the responses from 152 employees, the results showed that employer branding strategy and supervisor support contributed significantly to employee retention. The findings highlight the importance of semiconductor companies maintaining a strong employer branding strategy and supervisors providing full support to employees as strategies for employee retention.

*Keywords:* Employee retention, branding strategy, supervisor support, semiconductor industry, technological advancement

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## 1. Introduction

In the competitive economic market of today, the key success of an organisation is measured not only by meeting and fulfilling the expectations of customers but also by the satisfaction of employees<sup>12,48</sup>. Employees are widely acknowledged as the backbone of any business and the most important asset for any organisation to function efficiently<sup>72</sup>. Organisations expect employees to apply not only their technical skills but also their individual capabilities and abilities to provide excellent performance that propels the organisation toward accomplishing its mission and vision<sup>71</sup>. Employees, on the other hand, are expecting more from their employers, such as higher pay, increased accountability, a good working environment, and the list goes on. Nonetheless, the most significant challenge that organisations face is employee turnover, which occurs when an employee leaves the company and the vacancy must be filled by someone else<sup>1</sup>. Employee retention is thus critical for organisations to achieve their goals<sup>79,92,95</sup>.

Further, approximately 60% of organisations admitted to having difficulty retaining employees especially those top talent<sup>28</sup>, with 70% of them unable to find replacements within the notice period<sup>1</sup>. Employee turnover has a number of negative consequences, amongst them, increased cost, resources and work delays, lower morale, decreased performance, and poor productivity<sup>17,45,46</sup>.

This study seeks to examine the factors influencing employee retention in the semiconductor industry in Penang. Penang became the first Free Industrial Zone in Malaysia in the 1970s. Many electronic and electrical multinational corporations (MNCs) such as Intel, ASE Electronics, Sony, and Motorola are well established in Penang due to its strategic location, modern infrastructure, good supply chain, and supply of talent. Over the years, these semiconductor companies have evolved from low-skilled manufacturing activities to high-skilled product research and development organisations. The value-added reshuffling activities are attracting more and more technical and knowledgeable employees to relocate to Penang, enabling the semiconductor industry in Penang to thrive<sup>67</sup>.

Employee retention appears to be a concern and challenge for many semiconductor companies in Penang, where the industry is expected to grow further due to technological advancements<sup>37</sup>, as well as international economic and political environments<sup>3,63,91</sup>. One of the most serious concerns is a scarcity of highly technical employees with backgrounds in engineering, technology, and science<sup>45</sup>. It is reported in the Education Ministry's 2020 Annual Report that 47.18% of students in Malaysian universities chose science, technology, engineering, and mathematics (STEM) programmes<sup>14</sup>, resulting in a decline in the number of engineers. Some engineers and technicians have chosen to relocate to the neighbouring country of Singapore in search of better pay and working conditions, whilst some may be poached or attracted by other semiconductor companies in Penang due to better salary, company reputation (including brand name), supervisory support, and potential career development. Semiconductor companies continue to struggle in building the diverse, premier workforces needed to meet demand<sup>82</sup>. These phenomena have eventually resulted in hiring difficulties and the ongoing labour shortages in the semiconductor industry in Penang<sup>60,69</sup>. At the same time, the industry is being challenged by new creations and innovations to improve its value chain in the market, not to mention competing countries like Vietnam that are catching up<sup>75</sup>, all of which necessitate the recruitment and/or retention of talents.

A successful organisation must have the employees to support and deliver their best performance in order to achieve the company goals and earn profit. The organisation is not able to run smoothly without employee contribution<sup>72</sup>. The employment relationship is facing crucial difficulties that are having implications for employee retention, motivation, and attraction that eventually cause intense rivalry<sup>23</sup>. It is important that the organisation should focus on managing and

utilising the human resources in the company in order to have long-term achievement. If an organisation is not capable of managing the employees in an effective way, this will have grave consequences, one of which is the employee planning to leave the company<sup>15)</sup>. In the end, the organisation is forced to bear the cost of turnover. These costs incurred are not only on new hiring but also in losing talented employees who may hold the knowledge and skills that benefit the company<sup>94)</sup>.

The remainder of the paper is structured as follows. The following section reviews the literature on employee retention and factors influencing employee retention, resulting in the development of a research framework and a series of hypotheses. The methodology is described next, followed by data analysis and discussion before the paper is concluded.

## **2. Literature Review**

### **2.1. Employee Retention**

The ability of an organisation to retain talented personnel is referred to as employee retention<sup>32)</sup>. Employee retention has emerged as a critical topic for top management discussion in the current era of globalisation and modernisation<sup>24)</sup>, particularly in terms of organisational performance and growth. Shah and Gregar insist that employers should develop strategies and policies to keep capable and valuable employees from leaving the company<sup>80)</sup>. Many researchers have also suggested for the Human Resources Department to consider how to reduce employee turnover and motivate employees to stay with the company for a longer period by developing and implementing relevant programmes and practices<sup>23,59, 89)</sup>.

Although recruiting valuable and knowledgeable employees is a top priority for organisations, employee retention is even more critical to prevent spending on employee turnover such as new hiring, training costs, loss of productivity, and the like<sup>50)</sup>. Thus, retention of employees is critical, especially in the semiconductor industry.

### **2.2. Herzberg Two-Factor Theory**

According to Herzberg's Two-Factor Theory, the success or failure of an organisation is dependent on the motivation of its employees, where organisations cannot function effectively unless their employees are motivated to work. If employees are not motivated in their current jobs, they may develop the intention to leave their companies. Creating a fully motivated workforce is hence the primary focus of management. Employers should monitor their employees, as well as investigate when issues with low motivation arise to minimise the turnover rate<sup>54)</sup>.

Employer branding strategy is one of the factors influencing employee retention as mentioned by Herzberg. Good pay, a healthy and flexible work environment, as well as a mature organisational culture are the key elements to building a good employer branding strategy<sup>65)</sup>. Morgan insists that organisations should take these elements seriously because they will have an impact on employee retention in the long run<sup>62)</sup>. Employees may not be satisfied working for a company with bad employer branding.

Salary and benefits are part of the elements of the hygiene factors proposed by Herzberg<sup>13)</sup>. Many organisations used high pay as a retention tool, which is related to the maintenance but not the motivator factor. Accordingly, the salary level should be reasonable and in line with the market wage level to prevent employees from switching to other companies. In addition, company benefits such as allowance, bonuses, and a medical care plan can also help to retain employees. Studies on employee turnover found that employees are looking for other motivator factors instead of just basic pay. With high pay and good benefits, the dissatisfaction of employees may subside, but the employee will not have an increased level of motivation, retention, and engagement<sup>7,47,56)</sup>. More than half of the employees prioritised job stability over salary. In

addition to competitive salaries, today's employees want job stability, respect, meaningful work, and a positive work-life balance<sup>47</sup>).

Herzberg also opined that companies should provide opportunities for growth and promotion to capable employees to increase their satisfaction level<sup>41</sup>). By providing training and career development, employees will know what position to pursue in the organisation. Besides, employees should have a sense of responsibility for their daily work, and superiors should minimise their control and provide full ownership to their subordinates. All these will result in the employees developing an interest in the job itself, where meaningful and challenging tasks will boost job motivation and satisfaction<sup>7</sup>).

Whilst work flexibility fails to increase the satisfaction of employees, it may result in employee dissatisfaction if the company does not provide a flexible working environment<sup>40</sup>). Organisations should have fair and clear policies in place, such as allowing for flexibility in working hours, dress code, and so on. Employees may feel dissatisfied if the working hours are longer or overtime is requested by management since this may have an impact on their personal lives. Besides, employees will feel that there is less monitoring by their supervisors when working from home, which may reduce the dissatisfaction of employees<sup>84</sup>).

Employee retention can be influenced too by relationships within the company, particularly those between superiors and subordinates<sup>87</sup>). The literature has called for employers to appreciate and recognise the achievements of their employees. Further, to retain employees, supervisors should always be supportive and provide useful advice to them. Management could establish a communication platform for managers and subordinates to share feedback and changes that benefit both parties<sup>93</sup>).

The five factors (employer branding strategy, salary and benefits, training and career development, job flexibility, and supervisor support) influencing employee retention as derived from the Herzberg's two-factor theory are discussed in the following subsections.

### **2.3. Employer Branding Strategy**

Employer branding strategy is defined as a targeted, long-term strategy to manage the awareness and perceptions of employees, potential employees, and related stakeholders toward a particular firm<sup>48</sup>). Backhaus and Tikoo elucidate that an employer branding strategy is a way for an organisation to differentiate its characteristics as an employer from competitors in the same field<sup>11</sup>). An organisation should need a good image and branding in order to increase the recruiting and retention of the employees. The applicants are able to know the organisation's perks, company benefits, working environment, and culture if the organisation builds a good employee branding in the public<sup>74</sup>). Promoting company branding, i.e. organisational value and culture, will eventually increase employee loyalty and help to promote the company branding to outsiders to attract potential employees<sup>33</sup>).

People working in a strong reputation company are usually more energetic, enthusiastic, and passionate. These employees have a lot of creative ideas and good workmanship standards. These employees are able to work at a feverish pitch and contribute many good ideas to increase the company's productivity. Increasing productivity is directly correlated with increasing sales. In the end, the company's business will grow dramatically and produce high revenue and profit. A high profit and cash flow company will let the employees feel safe and secure in their jobs. The employees will not be concerned about any financial crisis happening in the company<sup>49,81,85</sup>). In other words, the attractiveness of an organisation creates a good image in the minds of employees and communicates to potential employees the value of the company and

the potential benefits of working for the organisation<sup>11</sup>). Hence, it is an effective attraction tool for an organisation in attracting and retaining a skilled and talented workforce.

Nyein and Kohsuwan conducted a study on employer branding strategy using the Herzberg two-factor theory and found that employees preferred working for companies with good employer branding strategies<sup>65</sup>). These companies are those with a clear purpose, culture, and story to communicate to employees what the company is all about. In addition, information about the perks, benefits, working environment, and culture of the company aids in the development of a good employee branding to the public<sup>73</sup>).

According to the Deloitte-SEMI Workforce Development Survey<sup>26</sup>), 60% of the respondents surveyed believe that semiconductor companies have poor branding and image in comparison to other technology organisations. About 59% of the respondents also believe that the career path in the semiconductor industry is less appealing than a career in other technology industries<sup>27</sup>).

Great employee branding could reduce the recruitment and training costs of a company. Although developing good employee branding is not that easy, it is a novel way for employers to promote their organisations in the long run<sup>9</sup>).

## 2.4. Salary and Benefits

Employers provide monetary or non-monetary rewards to employees based on their work performance<sup>6,31</sup>). Monetary rewards such as salaries, bonuses, profit sharing, overtime pay, and allowance are all considered important elements in motivating employees to perform well in their jobs and retaining them in the company<sup>17,64</sup>). It is also a factor in their ability to find a job that meets their salary expectations so that they are willing to contribute their skills and abilities to their work<sup>73</sup>). On the other hand, non-monetary rewards or benefits such as medical healthcare, company trips, company-paid cars, and company training are also some of the factors that influence employee retention<sup>4,20,22</sup>).

According to Herzberg's theory of motivation, people will be dissatisfied if they are paid less based on their educational background instead of their experience or skills<sup>39</sup>). However, if there is no proper and mutual reward system and benefits, employees will be dissatisfied as well<sup>45</sup>). Competitive salary and pay, as well as a comprehensive reward system, are the elements of motivators in organisations which may eventually lead to employee retention<sup>5,39,89</sup>).

An attractive salary and benefits package can entice newcomers whilst sustaining current employees. Besides, giving people a significant raise can easily retain employees in the company as it is a way to provide recognition to employees<sup>34</sup>).

## 2.5. Training and Career Advancement Opportunities

Training and career advancement opportunities can be defined as the need for employees to be given the opportunity to gain new knowledge and learn new skills to perform better and advance to a higher position or job responsibility<sup>70</sup>). Delery and Doty define training and career advancement opportunities as the degree of training provided by an organisation to employees to develop their skills<sup>25</sup>). Training has also been referred to as the development of attitude, knowledge, and skills required by staff to perform their tasks proactively, productively, and effectively. The capability and ability of employees will be developed and established through training and career advancement opportunities, which will have a direct impact on customers<sup>19</sup>) and the productivity of an organisation<sup>55</sup>).

Martini and Cavenago<sup>58</sup>) describe career development opportunities as the outcomes of actions on career plans as viewed from both individual and organisational perspectives; as such, career advancement opportunities can be viewed from the standpoints of the employer and employee. Employers always strive to improve the performance and productivity of

employees by providing career advancement and determining the best fit between the staff and the job. On the other hand, employees believe that career advancement is critical for them to improve themselves to receive higher pay or recognition from the organisation<sup>57,66,83</sup>).

Training and career advancement opportunities have also been identified as a driving force in lowering employee turnover rates, particularly in retaining employees who are eager to learn and gain new knowledge. However, employee retention has become a major issue in the semiconductor industry, where a lack of training that supports emerging technologies has been reported<sup>2</sup>). Many semiconductor companies are unable to keep up with the advancement of new technologies and develop relevant training programmes such as artificial intelligence and autonomous driving<sup>68</sup>). Nonetheless, many semiconductor companies recognised the value of organisational knowledge in employee retention. Many of these companies are supporting internship and apprenticeship programmes, which could enhance the capabilities and abilities of employees to increase their productivity and more importantly to retain them<sup>57,86</sup>).

## 2.6. Job Flexibility

Job flexibility refers to changes made by the employer and the employee to make the employees feel that their working style is better and capable of meeting personal and company goals<sup>78</sup>). People are increasingly concerned with work-life balance rather than the amount of money they can earn, placing a premium on flexibility in working hours and environment when choosing or shifting to a new job. According to Richman et al., job flexibility was ranked first amongst all employee benefits by 53% of respondents in HubSpot's 2017 Consumer Omnibus<sup>78</sup>). Similarly, the 2015 Workplace Flexibility Study<sup>18</sup>) reported that half of employees ranked job flexibility as one of the critical benefits, whilst 75% of employees ranked job flexibility as the most important aspect of company benefits, ahead of the second element – financial assistance. Hofferth and Curtin found in their study that flexibility in the working environment increases productivity by 75%<sup>42</sup>).

Job flexibility would not be achievable in the absence of technology. Many semiconductor companies operate in multiple locations worldwide<sup>30,61</sup>). A high-tech networking system and communication tools are required for employees to communicate internally and externally in different locations and time zones. It is not prohibitively expensive for semiconductor companies to invest in communication tools such as WebEx, GoToMeeting, and Zoom, which are currently low-cost and effective tools in the market. Employees can easily adapt and find the most comfortable way to incorporate this working style into their lives, which may eventually improve productivity<sup>21</sup>).

In addition, job flexibility is a valuable recruiting and retention tool in the semiconductor industry. Around 70% of employers will fully utilise 'job flexibility' as a strategy to hire and retain employees. It is also an added advantage for employees with children at home. Besides, 51% of manufacturing employees have requested for their companies to provide job flexibility options.

## 2.7. Supervisor Support

Supervisor support refers to the relationship between supervisors and subordinates<sup>53</sup>). Supervisor support includes work-related guidance and advice, performance evaluation, and career development<sup>88</sup>). As a social exchange construct, supervisors and subordinates are expected to develop a good relationship and trust each other<sup>16</sup>). Since the relationship between the supervisor and the subordinates is a factor that may contribute to employee dissatisfaction with the job, managers should cultivate relationships with employees to ensure satisfaction<sup>41</sup>). Employees who felt valued, respected,

and supported by their supervisors were more likely to express lower intentions of leaving the organisation<sup>29</sup>). This relationship is important in maintaining a stable workforce within an organisation.

### 3. Research Framework

Figure 1 shows the research framework of the study. Based on the literature, it proposes that employer branding strategy, salary and benefits, training and career development, job flexibility, and supervisor support may have significant relationships with employee retention in the semiconductor industry.

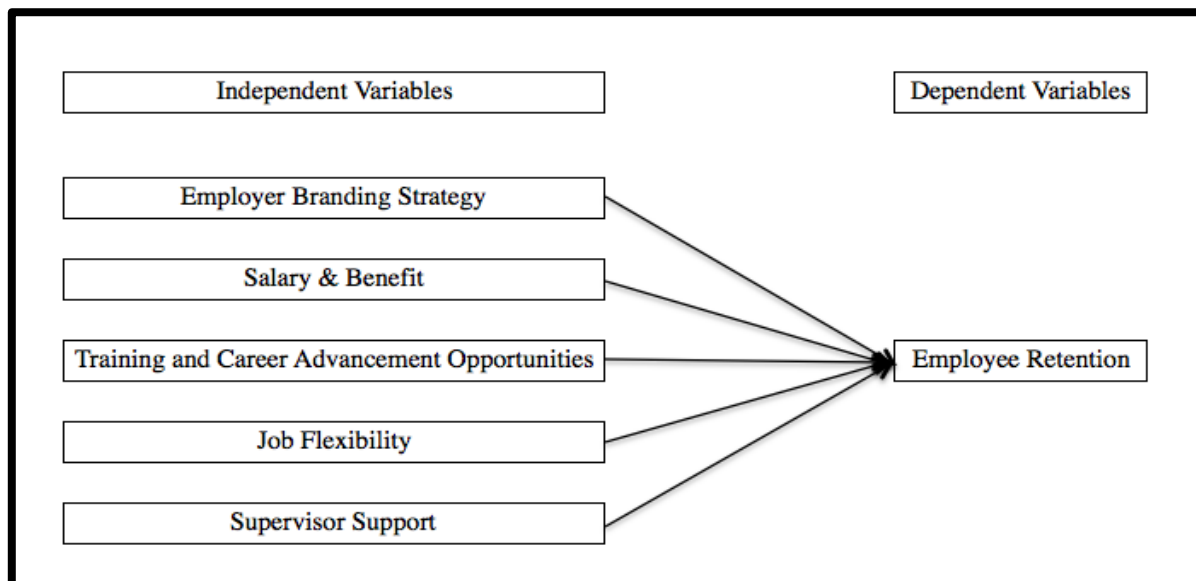


Figure 1. Research Framework

#### 3.1. Research Hypotheses

Based on the research framework (Figure 1), the following hypotheses were developed to be tested in the study:

*H1: There is a relationship between employer branding strategy and employee retention in the semiconductor companies.*

*H2: There is a relationship between salary and benefits and employee retention in the semiconductor companies.*

*H3: There is a relationship between training and career advancement and employee retention in the semiconductor companies.*

*H4: There is a relationship between job flexibility and employee retention in the semiconductor companies.*

*H5: There is a relationship between supervisor support and employee retention in the semiconductor companies.*

#### 3.2. Sampling Method

This study focuses on the semiconductor companies in Penang. According to InvestPenang, the semiconductor companies in Penang can be categorised into six sub-divisions, which are electronic components, consumer electronics, industrial electronics, electrical products, electronics manufacturing services, and renewable energy<sup>44</sup>). Table 1 shows the sub-divisions and companies in the semiconductor industry in Penang.

Table 1. Sub-Divisions and Companies in the Semiconductor Industry in Penang

Sub Sectors	Companies
Electronic Components	Intel TF-AMD Broadcom IBIDEN Analog Devices
Consumer Electronics	SONY Panasonic Western Digital DELL SanDisk
Industrial Electronics	BOSCH Motorola Keysight Technologies SAM Engineering ViTrox
Electrical Products	OSRAM B-Braun Abbott Laboratories Flex, Lumileds Tecomet
Electronics Manufacturing Services (EMS)	Plexus Jabil Benchmark Sanmina Inari Amertron
Renewable Energy	Jinko Solar JA Solar

According to Table 1, there are a total of 27 semiconductor companies in Penang. The probability sampling method to be used in this study is simple random sampling, in which the employees of these 27 semiconductor companies have an equal chance of being nominated for participation in the survey. In this study, G\*Power was used to calculate the sample size required. Based on the results of G\*Power, the total sample size was estimated to be 138 (see Figure 2), with an alpha level ( $\alpha$ ) of 0.05.



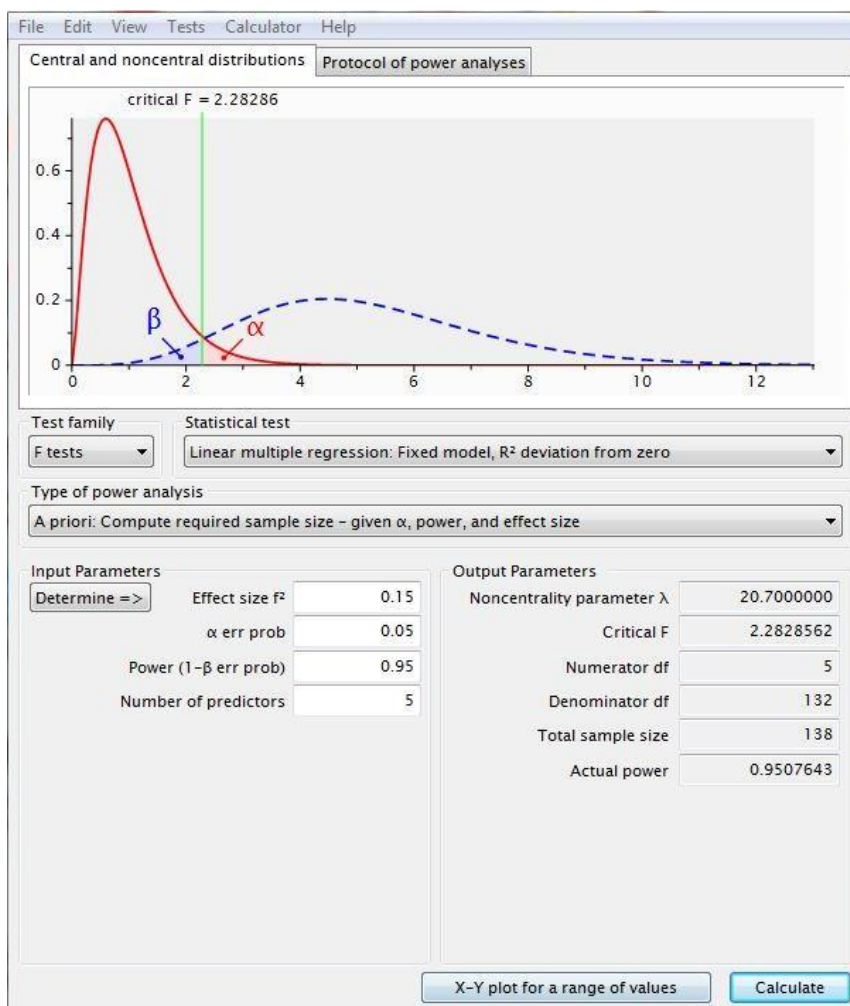


Figure 2. Central and Noncentral Distributions of G\*Power

#### 4. Data Collection Method

The research framework depicted in Figure 1 serves as the foundation for developing the survey questionnaire. The draft questionnaire was piloted on 30 employees prior to its actual dissemination. The questionnaire consists of three sections. Section A focuses on collecting demographic information. Section B contains questions on employee retention, whereas Section C comprises questions on the five independent variables. The questionnaire was distributed to respondents who work in the semiconductor companies in Penang (Table 2) through company emails and social media (WhatsApp). A clear consent letter has been established to inform respondents about how their data will be utilised to maintain trust and foster a secure environment for data collection. A total of 152 sets of responses were received within three months. Data was extracted from Google Forms and coded on an Excel sheet before being imported into SPSS tools.

As shown in Table 2, nominal scale was used as a unit of measurement for demographic information in Section A. The questions in Section B and Section C were measured using the 5-point Likert interval scale, i.e., 1 = strongly disagree; 2 = disagree; 3 = no comments; 4 = agree; and 5 = strongly agree. The questions in Section B were adopted from Kyndt et al.<sup>52</sup>. For Section C, the questions were adapted from various studies, i.e., employer branding strategy<sup>76, 85</sup>, salary and benefits<sup>10</sup>, training and career advancement opportunities, and supervisor support<sup>15</sup>, and job flexibility.

Table 2. Questionnaire Structure of the Study

Section	Number of Questions	Variables	Unit of Measurement
A	9	Demographic Information	Nominal scale
B	11	Employee Retention	Interval scale
C	10	Employer Branding Strategy	Interval scale
	4	Salary & Benefits	Interval scale
	4	Training and Career Advancement Opportunities	Interval scale
	10	Job Flexibility	Interval scale
	8	Supervisor Support	Interval scale

#### 4.1. Data Analysis Methods

The IBM SPSS software was used to analyse the demographic information, whilst the SmartPLS was employed for data analysis. The descriptive statistics, structural equation modelling (SEM), convergent validity, construct validity, factor loading, average variance extracted (AVE), composite reliability, discriminant validity, Cronbach's alpha, and goodness of fit index were presented in the following sections..

### 5. Results

#### 5.1. Demographics Information Analysis

There was no missing data amongst the 152 responses. Table 3 shows that female respondents made up 53.3% of those polled. The largest group of respondents was between the ages of 26 and 30 (31.6%), followed by those between the ages of 36 and 40 (17.1%). There was only one respondent who was under the age of 20. Half of the respondents have one to five years of experience working in the semiconductor industry, followed by those with relevant work experience ranging from six to 10 years. Only 10 respondents have worked in the semiconductor industry for 21 years or more. Half of those polled were single, followed by those who were married. In terms of academic qualifications, 70.4% of the respondents held a bachelor's degree or equivalent, with only one holding a doctorate degree or equivalent. About 65.8% of the respondents worked 40 to 50 hours per week, with 25.7% working between 51 and 60 hours per week. About 100 respondents have been with their current semiconductor company for one to five years, followed by those between six and 10 years (21.7%) and 11 and 15 years (8.6%). Only four (2.6%) and five (3.3%) respondents have worked for the same company for 16 to 20 years and 21 or more years, respectively. About 48% of respondents earned between RM2,501 and RM5,000 per month, with only 30.9% earning between RM5,001 and RM10,000. Only 2% of them received RM15,001 and more. In terms of job positions, 60.5% were administrators or engineers, followed by 14.5% of operators or technicians, and 11.2% managers in the companies. In addition to the positions listed in the questionnaire, three employees held positions that were distinct from the others, namely officer, sales coordinator, and senior executive.

Table 3. Respondent Profiles

Demographic Information	Characteristics	Frequency	Percentage (%)
Gender	Male	68	44.7
	Female	84	55.3
Age	20 years old and below	1	0.7
	21 – 25 years old	23	15.1
	26 – 30 years old	48	31.6
	31 – 35 years old	24	15.8
	36 – 40 years old	26	17.1
	41 – 45 years old	19	12.5
	46 – 50 years old	0	0.0
	51 years old and above	11	7.2
Work Experience in Semiconductor Industry	1 – 5 years	76	50.0
	6– 10 years	39	25.7
	11 – 15 years	16	10.5
	16 – 20 years	11	7.2
	21 years and above	10	6.6
Marital Status	Single	76	50.0
	Married	74	48.7
	Divorced	2	1.3
Education	Secondary Education (SPM) or the equivalent Certificate/Diploma or the equivalent	21	13.8
	Bachelor's Degree or the equivalent	15	9.9
	Master's Degree or the equivalent	107	70.4
	Doctorate Degree or the equivalent	8	5.3
	Doctorate Degree or the equivalent	1	0.7
Current Working Hours (Weekly)	40 – 50 hours	100	65.8
	51 – 60 hours	39	25.7
	More than 60 hours	13	8.6
Total Length of Time You Worked in Current Company	1 – 5 years	97	63.8
	6 – 10 years	33	21.7
	11 – 15 years	13	8.6
	16 – 20 years	4	2.6
	21 years and above	5	3.3
Monthly Salary	Below RM 2,500	25	16.4
	RM 2,501 – RM 5,000	73	48.0
	RM 5,001 – RM 10,000	47	30.9
	RM 10,001 – RM 15,000	4	2.6
	RM 15,001 and above	3	2.0
Job Position	Operator / Technician	22	14.5
	Team Lead / Shift Lead	18	11.8
	Administrator / Engineer	92	60.5
	Manager	17	11.2
	Officer	1	0.7
	Sale coordinator	1	0.7
	Senior Executive	1	0.7

## 5.2. Assessing Reliability and Validity

### 5.2.1. Cronbach's Alpha

Table 4 shows that the Cronbach's alpha for all the variables were greater than 0.70, which is significant to the research tiles that are considered good.

Table 4. Cronbach's Alpha Statistics from Pilot Test

Construct	Cronbach's Alpha
Employee Retention	0.724
Employer Branding Strategy	0.910
Job Flexibility	0.915
Salary & Benefit	0.814
Supervisor Support	0.830
Training and career Advancement Opportunities	0.854

### 5.2.2. Convergent Validity

Table 5 shows that there were a total of 47 loadings from the independent and dependent variables. The overall factor loadings were greater than 0.50, indicating that the items were appropriate to be used in this study. Besides, the composite reliability was tested where all the items exceeded the recommended value of 0.70<sup>35)</sup>. All the AVE values were greater than 0.50<sup>36)</sup>.

Table 5. Results of Assessment of the Measurement Model

<b>Construct</b>	<b>Loadings</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted (AVE)</b>
<b>Employer Branding Strategy</b>	0.802	0.948	0.646
	0.770		
	0.798		
	0.766		
	0.823		
	0.822		
	0.797		
	0.798		
	0.805		
<b>Salary &amp; Benefit</b>	0.852	0.917	0.734
	0.843		
	0.855		
	0.859		
	0.869		
<b>Training &amp; Career Advancement Opportunities</b>	0.919	0.943	0.805
	0.904		
	0.890		
	0.874		
	0.822		
<b>Job Flexibility</b>	0.766	0.95	0.655
	0.850		
	0.836		
	0.809		
	0.747		
	0.788		
	0.863		
	0.822		
	0.784		
<b>Supervisor Support</b>	0.79	0.933	0.636
	0.786		
	0.798		
	0.822		
	0.872		
	0.805		
	0.818		
	0.675		
<b>Employee Retention</b>	0.940	0.964	0.714
	0.756		
	0.937		
	0.941		
	0.817		
	0.727		
	0.794		
	0.675		
	0.913		
	0.914		
0.829			

### 5.2.3. Discriminant Validity

Table 6 shows that the values in bold were greater than other values, confirming the discriminant validity of the model listed<sup>35</sup>).

Table 6. Discriminant Validity of Construct

	Employee Retention	Employer Branding Strategy	Job Flexibility	Salary & Benefit	Supervisor Support	Training & Career Advancement Opportunities
Employee Retention	<b>0.845</b>					
Employer Branding Strategy	0.704	<b>0.804</b>				
Job Flexibility	0.343	0.470	<b>0.809</b>			
Salary & Benefit	0.448	0.557	0.425	<b>0.856</b>		
Supervisor Support	0.528	0.648	0.498	0.480	<b>0.798</b>	
Training & Career Advancement Opportunities	0.410	0.574	0.496	0.553	0.556	<b>0.897</b>

## 5.3. Structural Model

### 5.3.1. Path Coefficients and Hypotheses Testing

The bootstrapping procedure (500 re-samples)<sup>36</sup> was applied to analyse the significance of the hypotheses constructed in this research. The path analysis (standard beta, standard error, and t-value) was employed to test the structural model. As shown in Table 7, amongst the hypotheses, two were supported, which were employer branding strategy ( $\beta=0.611$ ,  $p<0.01$ ) and supervisor support ( $\beta=0.138$ ,  $p<0.01$ ), both of which have positive relationships with employee retention, whereas salary and benefits ( $\beta=0.076$ ,  $p<0.01$ ), training and career advancement opportunities ( $\beta=0.045$ ,  $p<0.01$ ), and job flexibility ( $\beta=0.014$ ,  $p<0.01$ ) were not significant to employee retention. In conclusion, H1 and H5 are supported in this study, whereas H2, H3, and H4 are not supported.

Table 7. Path Coefficients and Hypotheses Testing

Hypotheses	Relationship	Std Beta	Std Error	t-value	Supported
H1	Employer Branding Strategy -> Employee Retention	0.611	0.082	7.501**	Yes
H2	Salary & Benefit -> Employee Retention	0.076	0.099	0.812**	No
H3	Training & Career Advancement Opportunities -> Employee Retention	-0.045	0.090	0.538**	No
H4	Job Flexibility -> Employee Retention	-0.014	0.081	0.242**	No
H5	Supervisor Support -> Employee Retention	0.138	0.087	1.489**	Yes

Notes: \*\* $p<0.01$ , \* $p<0.05$

### 5.3.2. Goodness of Fit Index

Table 8 shows that the GOF index was 0.911, which was between 0 to 1, indicating that it was significant<sup>38,90</sup>.

Table 8. Goodness-of-Fit Index

Construct	AVE	R <sup>2</sup>
Employee Retention	0.714	
Employer Branding Strategy	0.646	
Salary & Benefits	0.734	
Training and Career Advancement Opportunities	0.805	
Job Flexibility	0.655	
Supervisor Support	0.636	
Average Values	4.19	0.198
AVE × R <sup>2</sup>	0.830	
GOF = $\sqrt{(AVE \times R^2)}$	0.911	

Besides, in order to evaluate the discrepancy between the observed correlations and the model-implied correlations, the standardised root means square residual (SRMR) is used for this study. Table 9 shows that the SRMR was 0.078, which was lower than 0.08 to 0.10 are considered a good fit<sup>43</sup>, which signifies that the model's predicted correlations closely match the observed correlations, implying that the model is a good representation of the data.

Table 9. Model Fit Summary

	Saturated Model	Estimated Model
SRMR	0.078	0.078
d_ ULS	6.894	6.894
d_ G	5.668	5.668
Chi-Square	3341.076	3341.076
NFI	0.629	0.629

## 6. Discussion

Whilst profit maximisation is the goal of every business, companies should place a greater emphasis on their employees and consider how to retain their skilled and talented employees to maintain profit and market position. Based on the results of hypotheses, it can be concluded that employer branding strategy and supervisor support are the significant factors that influence employee retention which are aligned with prior research<sup>8,29,48</sup>.

Employer branding strategy serves as the first impression of employees or outsiders to understand the organisation. Many successful organisations will always prioritise their employees to ensure the employees are happy working for the company. Many semiconductor companies are beginning to focus on promoting company branding, so many projects have

been implemented to create a good employer branding strategy. A healthy employer branding strategy may influence the behaviour of employees, and employees may seek self-improvement to meet customer requirements. This can eventually lead to increased productivity. Besides, for the human resources department, a good employer branding can help attract and hire experts whilst also increasing employee loyalty to the organisations. As a result of implementing employer branding strategy, there will be a strong intention of employees who are willing to stay in a company.

In addition, superiors serve as representatives of the management team. Employees can be easily motivated when they receive support from their superiors. The managers could always maintain open communication with employees by providing a platform for them to give feedback on issues encountered and provide the necessary advice to employees. The support and respect from superiors can improve the momentum of the working environment and eventually increase the sales of the company. In other words, employees who feel connected and supported by their peers and supervisors are more likely to remain with the organization<sup>77)</sup>.

Three variables, namely salary and benefits, training and career advancement opportunities, and job flexibility are not the key elements influencing employee retention in the semiconductor industry, which is opposed to previous studies like Abu Bakar et al.<sup>2)</sup>, Clarke<sup>21)</sup>, and Kumar<sup>51)</sup>. This is probably because the semiconductor industry provides satisfactory salary and benefits, training and career advancement opportunities, and job flexibility to senior and junior workers, making the employees less likely to concentrate on these factors in their careers. Nevertheless, only 9% of employers in the semiconductor industry stated that job flexibility is feasible in their organisations. Although working from home is a popular trend and has become common amongst this generation, it is difficult to implement job flexibility in the semiconductor industry because many of the workers are operators, technicians, and engineers who need to be on the production floor to complete the job<sup>27)</sup>.

## 7. Implications

The semiconductor organisations could enhance their employer branding strategy to current employees and even outsiders to maintain a strong reputation and image in the eyes of the public. Besides, supervisors should provide support by listening to the concerns expressed by subordinates and assisting employees in resolving the issue.

The findings of this study could contribute to the semiconductor industry in Penang since there has been little research on the subject. Employers could use the findings as a guideline to effectively retain employees by making some changes within the organisation. The findings of this study also provide data for the Penang government on the current employee retention issue in the semiconductor industry, allowing the state government to implement more useful programmes in the factory area.

## 8. Conclusion

Since its establishment as a free trade zone in 1972, Penang has become a rapidly growing economy with an increasing demand for skilled talent. Today, employer branding and supervisor support have become the strategic tools used to attract people and create interest in companies. The semiconductor companies should focus on these factors to increase their level of sustainability and competitiveness.

In this study, data collection was a challenge due to poor responses from the semiconductor industry employees. Further, some of the respondents might not answer the questionnaire accurately if they did not understand the current practices in



their organisations that were covered in this research. Besides, the respondents are from different educational backgrounds, years of working experiences, marital status, and positions, therefore, it may influence the results of the study.

Since the independent variables were based on the empirical literature, there may be other factors that could be included in future studies. Besides, this study also can be conducted by focusing on demographics as moderating variables and covering millennials or minorities only. Comparative analysis is also possible to confirm the results. This study only captured the quantitative data, hence qualitative data may be included in future studies to enable a deeper understanding of the antecedents of employee retention.

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