The challenges of the ageing population on the Malaysian construction industry

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Abstract. Malaysia will be an ageing nation by 2035, when 15 per cent (5.6 million) of the population are classified as senior citizens. The ageing population does not only give an impact to the building design and structure, but also on the construction workforce and industry. The government has taken steps in its preparation to face the challenges of an ageing nation including ensuring adequate health care services, financials as well as infrastructure that are senior-citizen friendly. The objectives of this study are to identify the industry’s awareness of the challenges as a result of the ageing population. The methodology adapted comprise of primary and secondary data collection. The primary data had been collected from the questionnaire surveys on the professional within the construction industry. The data then were analyzed using the percentage score and the diagram such as bar chart had been used to visualize the results from the analysis. While, secondary data were collected through literature review to gather information and important views from previous studies. In achieving the objective of the study, 100 questionnaire surveys have been distributed to the respondents, but only 39 questionnaires have been returned back. The discussions are done by comparing the result that is in the form of a percentage. Based on the study that has been done, the respondents are aware that the changing is needed in organization current construction projects, the additional cost is required to make an appropriate building for the elderly and there is a need of workspace to address the changing population in the industry. The challenges will be faced by the government to deal with an ageing population. The impact of ageing is the worker that close to retirement age will extend their career based on certain factors and also, loss of skill, experience and knowledge. The respondents agree that it is important to adopt the built environment to cater the needs of older people. The accessibility to the building has the highest priority to be adopted on the built environment.

1. Introduction
Under the Economic Transformation Programme (ETP), the Malaysia’s construction industry is expected to be busy for this year when the project that launched for a few years ago show the committed investment and this will bring the economic benefits to the country. This ETP programme not only driven by the government project, but it is also by the private entities. In 2016, the construction sector’s share of GDP was 4.5% valued at RM50.1 billion and registered 7.4% output. This sector hired 1.25 million employees, which showed a drop of 4.4% from 1.31 million in the previous year. By 2020, the sector is expected to contribute 5.5% to GDP at RM327 billion and employing 1.2 million employees. Despite its smaller contribution, the construction sector continues to play a key role in transforming the economy through its multiplier effect on many industries by accelerating domestic economic activities and providing comprehensive high-end quality infrastructure [1-2].

The research that has been done by the World Health Organization (WHO), has found that the people that aged for 60 years old and above will be increased from 605 million to 2 billion between the years 2000 to 2050 [3]. This range of age has a difference talent, experiences, skills and knowledge. Then, when the time for those people to retired from their career the industry will face the loss. When the
older population increase we need to ensure to have the better quality of life and this required financing. Therefore, we need to have a good system to control the costs. In Australia, the National Ageing Research Institute (NARI) [4] was established to conduct research into ageing and improving the life and health quality of older people.

Ageing is a slow biological deterioration process [5]. It is a unique process that required one-directional relationship between the individual and time. The human organs can absorb information and process information based on the nervous system, movement and external action on the environment, energy supply and consumption. When the issues of the ageing population occur, the world are focusing more on how to maintain and securing the healthy to prevent such age-related disease. However, the needed of infrastructure and institutions as soon as possible for managing population aging also important [3].

The Chartered Institute of Building (CIOB) has conducted the study on how the ageing population impact the construction industry [6]. CIOB Britain found that the children under sixteen are less than the pensionable age people. This study has found that the ageing population does not only give an impact to the building design and structure, but also on the construction workforce and industry. The aging workforce that comes along with the globalization of business will lead to increasing of talent worldwide demands and the migration is needed for some countries [7].

In 2017, the population in Malaysia is estimated at 32.0 million with 28.7 million are citizens and 3.3 million are non-citizens [8]. Malaysia will be an ageing nation by 2035, when 15 per cent (5.6 million) of the population are classified as senior citizens. These people required the house and the government also developer will try to provide and fulfill the demand for the public. This is especially for the urban area like Kuala Lumpur, Selangor, Pulau Pinang and Johor. Rostam [9], from her studies found that there are population changes of the Extended Metropolitan Region, Klang-Langat. This is encouraging the expansion of production and services industry in that area. The housing development was increased in this area and the problem might come out whether they consider the development with the environment.

Previously, the retirement of Malaysia public work is at the range of age 56-57 years old. However, the Malaysia government expended the age of retirement to 60 years old. This is brought many feedbacks from the public, whether it is positive or negative opinion. Therefore, the private sector also needs to expend their age of retirement. From this view, all the parties that involve in development need to focus on various aspects to consider the ageing people. It is because the workers that close to retirement time might not have the capability to do the routine activities like the young people. Zaki et al. [10], state that the Malaysia has faced the skilled shortage issue in the construction industry, whether to retain the skill people and they need to train the new workers to meet the standard skill [11-14]. This has given a big impact to the contractor, especially to maintain the skilled worker and experienced worker, especially when the worker wants to return to their country or retire from the industry.

So far, there is very little published data and analysis of the current issues of ageing population on the Malaysian construction industry. Therefore, this study is important and timely in order to identify the construction industry’s awareness of the challenges as a result of ageing population.

2. Brief Literature
United Nation agreed to standardize the 60 years old and above as older population or ageing population. The ageing population has a linked to the retirement age and there is a different retirement age between the man and woman based on their functional ability. Ageing population can be defined as a state when the individual is not being able to work as their normal daily activity in actively. They also need the condition that will help to maintain or gain a better healthy life. Hedge et al. [15]; Older Americans Act
(1965); the Job Training Partnership Act (1982), and the Workforce Investment Act (2000) define an older worker are the people in the categories of age 55 years and older.

The aging population will increase when the rate of birth reduced and the people living longer due to better health care [7]. In certain countries, they are not very well prepared to face the changes and the same as the organization. They might have talked about it, but there is no or little action toward ageing problem. This will make the ageing faced the unsecured situation and condition. Ilmarinen [16] define the increase in life expectancy together with lower birth as the cause of aging population and workforce in the developed or less developed countries. The public policies of the country play as an important role in managing older people. This is to make sure that the older people are secure and protected also to give a better life of the individual and stabilise the society.

The age not as a factor to adapt with the new technology or thing but the individual’s personality and the working environment play the key role. From his study, Ilmarinen [17] found that the aging workforce give challenges to a few categories of group such as individual, enterprise and society. Individual might face the problems or possibilities in their functional capacity, health, competence, work motivation, work ability, work exhaustion and unemployment. The enterprise also might face the problem or possibilities from aging workforce such as productivity, competitiveness, sickness absence, tolerance for change, work organization, work environment and recruitment. The lastly is to the society, when there are attitudes toward the work and retirement, age discrimination, early retirement, work disability costs, retirement costs, health care costs and dependency ratios. There are four changes that related to aging workforce that suggests by Ilmarinen [16]:

a) Towards aging, there are societal changes in its attitudes
b) Increasing the knowledge level of managers and supervisors in age-related issues
c) Changes in the nature of working life and flexible work arrangements. Which is they do not comfortable with the routine and need the change such as working in shift
d) Changes in the health care services to meet the increasing demands of older workers.

The other factors such as discrimination against the older workers to attain job training, older employee also less willing and less able to accept to new situation, or feeling fears and less self-image during the training process. Marquie [5], state that the problem that usually faced by the ageing workers at the construction site is keeping or maintain the balance, visual information in the maintenance of equilibrium, and falls at work.

Silverstein [18] has state that the safety and performance among older workers can give a challenge. The performance of worker would not affect because of age otherwise for the works that use the capacities and the capacities faced the decrease with age. Snel and Cremer [19] have defined the challenges from the ageing population as Making companies aware of the problems of aging, Adapting jobs, Health promotion and prevention, Training, Adjustments to work careers and Creation of a forward-looking management of human resources.

3. Methodology of the Study
In order to achieve the aforementioned objective of this study, the study involved three phases of study, as shown in figure 1. The Phase 1 has three (3) steps, Phase 2 involved one (1) step and Phase 3 has two (2) steps. At the first (1) step (Determine the Problem Statement) of this study, the issues of the construction industry were defined and the problem statement was prepared. Second (2) step (Identify Objective and Scope), the objective and scope of the study were carrying out based on the problem statement that prepared in the first step. Third (3) step, the literature review is where we need to study the articles, journal papers and others collection that related to the objective and scope of the study.
Fourth (4) step, which is in Phase 2 involved the preparation of a questionnaire and data collection. The researcher opted quantitative analysis technique [20-21] to answer the objective of this study. The questionnaire survey distributed among construction players in various fields through mediums such as social media, email and distributed directly to the targeted group in their companies and construction sites. The participant involves in data collection for this study include consultants, contractors and other construction players. At this step, processes of collecting data from the respondent require to do the analysis and meet the objectives of the study.

After the fourth (4) step has been done, data (step five) that collected before can be analyzed by using SPSS and Microsoft excel software. The data collected, grouped according to the frequency of the answer given by the respondent. The percentage calculated by dividing the number of observations with total number of observations, then the result should times with 100% in order to gain the result in percentage value. The results then, are presented in the form of charts and table. Then the result will be discussed. Finally, after that analysis has been done, conclusion and suggestion of the study will be prepared for the better construction industry and next study.

1. **Determine the problem statement**  
   Study the issues of the industry

2. **Identify objective and scope**  
   From problem statement, the objective and scope of study will be take out

3. **Literature review**  
   Study of articles, journals, papers or others collection

4. **Distribution of Questionnaire & data collection**

5. **Data analysis**  
   Analyzed data collection and give suggestion for factor that affect the construction productivity

6. **Conclusion/Recommendation**

**Figure 1. Brief Research Methodology**

**4. Results and discussion**

4.1 **Respondent background**

More than 100 questionnaires set were distributed by hand and through the email to the respondents located in the peninsular Malaysia. 39 numbers of respondent had answered the questionnaire which make up about 39% had responded to the questionnaire distributed. Figure 2 shows the percentage of the respondent which is divided into a few ranges. The highest percentage respondent age ranges are 21 to 30 years old (71.79%). Respondents age ranges from 41 to 50 years old is the lowest (2.56%). The respondents gender is 56.41% female and 43.59% male.
Figure 2. Respondents’ age range

Figure 3 shows the percentage of job position of respondent in their working organization. The respondent positioning as an engineer shows a higher percentage of 33.33% than the quantity surveyor (25.68%), manager (12.82%) and administrative and other position.

Figure 3. Respondents’ job position

Most of the respondents came from the construction company for 79.49% meanwhile consultant firm and developer only 5.13% and 15.38%. The consultant and developer firm show lower percentage than the construction company because of the difficulty to receive the feedback from this job sector. This could be because of the workload of those two-job sector. Figure 4 shows the percentage of numbers of employee in a company where the respondent is working. The numbers of employee that have more than 100 numbers of employees are the highest for more than 53.1%, where it is half of the respondent
number. The organization that has employee around 21-40 numbers is the second highest with 23.08%. Number of employees around 61-80 and 81-100 is the lowest for the 2.56%.

![Bar chart showing employee numbers by range](image)

**Figure 4. Respondents’ employees’ capacity**

4.2. The awareness of the challenges as a result of ageing population in the construction industry

The highest range of age respondent that aware with the ageing population challenges is in the range of 21-30 years old (62.50%) and 31-40 (25%). Meanwhile, the lowest percentages for 4.17% are range of 20 years and below, 41-50 years and 51-60 years. From the figure, we can conclude that most of the respondent aware about the challenges facing the construction industry as a result of an ageing population. This can be factor of the surrounding when the ageing people around the respondents increase. Example, their relative, colleagues, neighbours and etc. The research and studies that has been publishing from the overseas study also encourage the awareness of the respondent. The guidelines of the design that consider the ageing people that produced by the other country also can be the factor of respondent awareness such as Lifetime Homes Standard. However, this standard not functions as mandatory in the UK [22].

The respondents also were asked whether the changing needs of an ageing population would reflect in organisation current construction projects. More than quarter of respondents, which is 38.46% of respondents agree that the organization current construction project would be reflected from the changing needs of an ageing population. In addition, the 38.46% of the respondents think that sometime the organization current project will be affected. The rest 23.08% of respondents believed no changes are required. This might happen when the person that in charge for the project are older and request for sudden retirement. The organization will need a time to replace another person to take in charge for the project. More time taken for the replacement, more profit might be loss.

Figure 5 shows the respondent opinion on the additional cost to make building appropriate for the elderly. Most of the respondents (53.85%) think that there are additional costs involve but they are not excessive. This could be due to most of the building that have more than 5 floors would need to install the lift to comply with regulations. The second highest respond is ‘Yes. Excessive’ for 20.51%. When the ordinary houses and design require to follow the standard to make the building more appropriate for the elderly, it causes the additional costs for the building. If the cost increases, the overall building price will be higher. This might cause the reduction of demand because the users could not afford to own it.
Figure 5. Additional costs to make appropriate building for the elderly

Figure 6 shows the respondent opinion about the possibility of an extension retirement age might need the workspace to be adapted to address the changing population. 59.4% respondent agrees that the workspace need to be adapted. Meanwhile the 28.1% do not agree and 12.5% of respondent do not know. Most of respondent agree to have a workspace because the ageing people might face the ergonomic posture and the suitable space that limit the movement. Figure 7 shows the respondent opinion whether the Malaysia Government has dealt with the challenge of an ageing population in an effective way or not. The feedback of respondent shows that, most of the respondents (71.9%) agree that the Malaysia Government has not dealt with the challenge of an ageing population in effective ways. Even the government already mention about the loss of workforce in the industry because of the retirement and the ageing people on the industry but there is still very little action to handle the ageing issues in the industry. The 17.95% respondents agree the government has dealt with the challenges of an ageing population. This could be due to the government efforts to train the young generation such as the skill centre such as Institut Kemahiran Belia Negara (IKBN) that not qualified to go to the institution of higher learning.

From Figure 8, there is very small of percentage of respondents that were informed and comply with the housing standard. This might occur when some of the parties that involve with certain project want to gain high benefit. Currently, the Uniform Building by Law (UBBL) is the only building standard regulation but it does not cater for the ageing people. Figure 9 shows whether the housing standard should be compulsory or not to be applied in the Malaysia construction industry. From the figure, we can say that the respondents agree to apply with the standard for the housing if it is compulsory or mandatory for the industry. All buildings are required to comply with the standard that has already stated by the local authorities’ codes and regulations. The certificate of completion and compliance (CCC) will be issued once the erection and completion of the building conform with the approved plans and the requirements of the provisions of Acts or by-laws, ensuring all technical conditions imposed by the local authority have been duly complied with and ensuring that the building is safe and fit for occupation.
Figure 6. Needs of workspace to address the changing population

Figure 7. Opinions on Malaysia Government’s dealt on the challenges of an ageing population

Figure 8. Awareness on the housing standard

Figure 10 show, the respondents also agree to have the similar standards as Housing standard to be adapted for commercial and public building. This is to make sure that the user feel comfortable and safe to stay, use or live in the building because the commercial and public building involve the society and the older people are also part of the society.
5. Conclusion

We can conclude that most of the respondents were aware about the challenges facing the construction industry as a result of an ageing population. The respondent agreed on the changing needs of an ageing population would reflect in the organisation current construction projects. The respondent also agreed that the additional cost will incur to make building appropriate for the elderly. The respondent agreed about the possibility of an extension retirement age might need the workspace to be adapted to address the changing population. Most of the respondents agreed that the Malaysia Government has not dealt with the challenges of an ageing population in effective ways. Only small of percentage of respondent agreed that they are well inform and comply with the housing standard. The respondents agreed to apply with the standard for the housing if it is mandatory for the industry. Lastly, the respondents also agree to have the similar standards as Housing standard to be adapted for commercial and public building to cater for the elderly.

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