Promoting Self-Responsibility: Learning from Australian Maritime Engineering Student and Alumni in Developing Employability Competencies

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Abstract. The concept of Global Maritime Fulcrum has changed the national strategy to redevelop Indonesian maritime power, including the strategy of Indonesian Higher Education Institutions in preparing their graduates to enter the labour market. Learners as the centre of the competency development process should proactively take self-responsibility (SR) by participating in competency-enhancing activities to possess not only technical skills but also competencies related to knowledge, attitudes and non-technical skills. The purpose of this paper was to describe the concept of self-responsibility from the perspective of student and alumni of Australian Maritime Engineering Schools in their process to develop employability competency. Data were collected from 1056 participants through a web-based self-report questionnaire. The quantitative analyses have suggested that the participants highly appreciated the importance of SR. By internalized their extrinsic motivations into positive behaviours, students with a high level of SR tend to an effective capacity for managing their personal competency development. In addition, a self-responsible learner also has developed self-awareness of his/her contribution to the development process. Therefore, the SR practice that appears to be best developed in development environments that could help learners to possess a series of competencies that they will confront in their real-life situation. This study has the potential to enrich the development of maritime engineering education in Indonesia by suggesting that Indonesian students need to modify their cognitive structure and develop the capability to reconstruct their development environment.

Keywords: Self-Responsibility, employability, competency-enhancing activities, maritime engineering education.

1. Introduction

The concept of *Global Maritime Fulcrum* (GMF) or *Poros Maritim Dunia* (PMD) has been christened by the Indonesian president, Ir. Joko Widodo, during the East Asia summit meeting in Myanmar. Through this concept, the Indonesian government announced a national strategy to redevelop the country's maritime power by focuses on five pillars, namely: "(1) rebuilding maritime culture; (2) management of marine resources; (3) developing maritime infrastructure and connectivity; (4) maritime diplomacy; and (5) improvement of maritime defence"[1, 2]. These pillars are not only fundamentally represented the ambition of Indonesia to be a sovereign country with a maritime power, but also to maintain its domestic security and to secure its national economic growth and social welfare.

Promoting this national maritime strategy, the Ministry of Research, Technology and Higher Education (*Kemenristekdikti*) has encouraged Indonesian higher education institutions (HEIs) to intensify several maritime engineering education programs, including marine engineering, naval architecture, ocean engineering and nautical science. However, the focus of the maritime engineering

education has been strongly affected by the globalization of market. For instance, the initial focus of maritime engineering education was to prepare graduates to enter the labour market with competencies to design and construct several maritime structures – including boats, cargo/passenger/ warships, fishing vessels, or submarines –although, the rapid global growth has accelerated numerous technological innovations has made maritime engineering educators to develop courses which not only concern about the moving vessels but also about offshore marine structures, such as oil rigs and fixed/floating offshore wind power.

The main argument here is that the maritime engineering discipline has diffused into many aspects of life and is shifting from the traditional paradigm of vessel designing to a new radical paradigm within a broader needed knowledge. Through this diffusion process, the role of the maritime engineer and the nature of maritime engineering practice are evolving and engineers are called upon to use their analytical and creative skills to provide the answers for the challenges of the new era. Therefore, these challenges have established that the professional development process to develop appropriate engineering competencies should be seen as a way for preparing students to smoothly transit from institutions' developmental environments into the labour market. In this regard, the maritime engineering study in a public university in Australia has designed to prepare students with employability competencies needed in three alternative maritime career options: namely, 1. Marine and Offshore engineer, 2. Naval architect and 3. Ocean engineer. These courses, later are referred as employability competencies development process, have been developed to address the needs of Australian maritime industry, including the $250 billion shipbuilding defence project.

Correspondingly, the term of *employability* should be seen as the key capability for maritime engineering students in addressing the competencies expected by the maritime industry. Therefore, employability is also commonly used in the approach for preparing students to enter and to survive in the labour market. However, employability is not limited to in-house training and job seeking activities only but is multi-dimensional [3]. This multi-dimensionality is mainly because the process to develop employability competencies involves not only the student, as the centre of the process, but also other parties (e.g. family, employer, development institution, government) which are difficult to control [4].

Another factor that also contributes in this multi-dimensionality is the uncertainty situations surrounding supply-demand of labour (e.g. number of jobs available, economic growth, labour demand, investment climate, participation rate and long unemployment duration). For example, Greece's financial crisis has escalated the national unemployment rate from 8.9% in 2009 to 23.6% in 2012 [5]. In the maritime engineering field, the 2016 report from the United States Department of Labour indicated that the unemployment rate for graduates in the Maritime engineering field was 1.8% [6]. Meanwhile, the employment rate of maritime engineering graduates in the Philippines was between 81 percent [7] and 95 percent in Canada [8].

This imbalance unemployment rate among the graduates from developing and developed countries has drawn our attention to investigating the contributing factors. Accordingly, our findings indicate that the competencies development within the maritime engineering field has not successfully created graduates with the quality as required by government or expected by the employer. Regarding this failure, Callan [9] argue caused by the lack of personal commitment from students regarding their own competencies development process. According to him, "… fostering generic skills requires changes to the motivations of students. Learners need to take responsibility for their own learning" (p.66). It is clear for Callan that the effectiveness of competency development process is not only determined by how good the curricula or how impressive the content-transferring process but also affected by students' sense of personal responsibility, referred to as Self-Responsibility (SR), in managing the development process. This sense of SR is expressed through the capability to actively choose the appropriate employability competencies they want to possess for their future career.

Correspondingly, the purpose of this paper was to describe the concept of SR from the perspective of students of Australian Maritime Engineering Schools in their process to develop employability competency.

2. Methodology

This study was employing a quantitative method for collecting data sample using an online questionnaire or known as a *web* a survey. Toha [18] highlighted the advantages of web surveys for collecting data such as: (1) without being hindered by any time or location limitations, (2) could reach a larger group of potential participants, (3) could be distributed at very low cost, (4) could be launched very quickly and (5) could reduce time for data analysis. Another advantage of using a web survey approach is simplicity. Instead of sending a response directly to researchers by mail, the participants are sending the self-response report by following the provided instructions on a survey website.

The potential participants were categorized into two different groups, namely: (1) Students and (2) Alumni. The first group consists of full-time and part-time students who have completed a minimum of one semester of any level of study in any engineering disciplines of the participating Australian engineering schools. Meanwhile, the inclusion criteria for participating in the alumni group were the alumnus from a participating Australian Engineering Schools with: (a) at least three months of working experience after graduating from an Australian Engineering School, (b) a minimum age of 20 and (c) a minimum qualification of a Bachelor degree in Engineering.

The data were collected using a newly constructed scale, the Self-Responsibility Scale (SRS) as the measurement instrument. The available measurement scales were not adequate enough to be used in this study. Therefore, a new measurement was constructed with 18 measurement items that were directly designed from seven components of SR, namely: as *Awareness*, *Involvement*, *Own reflection*, *Independency*, *Initiative and creativity*, *Characteristics role* and *Managing resources*. In addition to these 13 measurement items, the SRS also contains several demographic items which should be answered in either multiple choice or short answer form. These demographic items are aimed to broaden the investigated variables which are related to the statistical methods for analyzing the obtained responses.

After granted ethics approval by to the Human Resource Ethics Committee of the University of South Australia (HREC UniSA) and the University Technology Sydney (HREC UTS), the SRS was administered to eligible participants from seven participating engineering schools in Australia that offering maritime engineering courses. The respondents were asked to provide their levels of agreement or disagreement to 18 items on the SRS through a 5-point Likert Scale ranging from 1 which indicates strong disagreement to 5 which indicates strong agreement.

Correspondingly, the obtained responses were 1064 (570 students and 494 alumni). Through data screening process, eight responses (2 students and 6 alumni) were identified with missing data. Therefore, only 1056 responses were used for data analysis using the Statistical Package for the Social Sciences (SPSS) version 22.

3. Results and Discussions

The concept of SR in the competency development field, perhaps, has not been recognized by the experts in this field. Surprisingly, the participants (n = 1056) positive responses (somewhat and strongly agreed) to the 18 items of the SRS strongly indicate their levels of understanding to this concept. For example, 90% of the participants have associated SR with the capability to self-manage their own development process (the responses to I19 ‘For particular competencies needed to be learned, I know what to do’). Similar understanding also showed by 938 out of 1056 respondents who somewhat and strongly agreed to I2 In the development process, I should decide what competencies I want to learn’. Collectively, the participants have understood that a high self-responsible learner is the centre of the development process, not others, who is able to plan, monitor and evaluate any learning limitations which he/she may have during the process of developing employability competencies. In conjunction, learners with a high sense of SR are capable to take necessary actions for effectively managing the process.

Furthermore, 908 participants agreed (199 participants somewhat agreed and 709 participants strongly agreed) with I27 'No one can force me to possess appropriate competencies'. Thus, when a learner can personally manage his/her motivation to engage in the competency development process, he/she is more likely to show a higher degree of control. Thus, the willingness to accept SR is expressed in a process where learners are able to make critical judgments about a range of competency development actions. By being able to make a critical judgment, the participants showed their level of confidence in their abilities to effectively manage their own development process. Correspondingly, the overall perceptions of the respondents about SR in their competency development experience were positive. However, these responses also indicate differences in responses among both groups of participants. To compare the perceptions of SR for participants in the two different groups, the researcher employed an independent sample t-test at $p < 0.05$. Accordingly, there was a significant difference in the perception of SR for the student ($M = 72.97$, $SD = 10.13$) compared to the alumni participants ($M = 65.64$, $SD = 10.33$; $t(1054) = 11.59$, $p = 0.001$) with a moderate effect of the differences in the means ($\eta 2 = 0.11$). To further determine if the differences between students and alumni were also significant on all the 18 items in the SRS, another independent sample t-test was applied.

Accordingly, the differences between students and alumni were found within three major effect sizes: (1) large effects (> 0.14), (2) moderate effects (0.06−0.14) and (3) the combination of very small (0.01– 0.06) and no significant effects (< 0.01). The participants differ significantly in relation to their level of autonomy (responses to I1, I10, and I18). The alumni participants have shown their confidence in the ability to control their own development process. In contrast, the student participants had not yet developed their sense of autonomy. The moderate difference between students and alumni were found in their responses to I13, I40, I41, I42, and I44. These differences reinforced that the alumni participants have a higher level of understanding of what they should do as self-responsible learners, including having a high level of motivation and independence in managing their competency development. In the last effect size, however, the students and alumni participants had a shared perspective about the characteristics associated with self-responsible learners, such as: being self-organized, self-controlled, being able to be self-regulated, self-confident and self-reflective. To provide a stronger clarification, these obtained responses were further examined by assessing the dimensionality of SR in several steps, namely:(1) Principal Component Analysis (PCA) for obtaining the underlying factors, (2) Explanatory Factor Analysis (EFA) to gain the explanation of the obtained factors and (3) Confirmatory Factor Analysis (CFA) to validate those factors.

The inspection to the correlation matrix indicates that most coefficients were greater than 0.3 and, thus, enough for conducting further examination of statistical correlation among the measurement items, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Correspondingly, the statistical results revealed that the KMO value was 0.847 and the sphericity test yielded the significance at $p < 0.001$. Furthermore, the numbers of factor extracted using *Kaiser's Criterion* or the rule to retain eigenvalues that are greater than 1 [10]were 12 explained 69.83% of the cumulative variance. The results of a screen test indicated that the screen bent after the fourth factor and, therefore, these four factors were retained for further analyses. This decision was supported by the results of a process to compare the eigenvalues from PCA with the criterion value generated by Parallel Analysis (PA).

To provide the interpretations of the retained factors, the EFA was applied using the Varimax orthogonal rotation (Table 1).

Table 1. Varimax Rotation of Four-Factor Solution

	Component				Mean (SD)	Standardised Factor Loading			
	1	2	3	4		ASI	SA	SAE	SM
i18	**.630**				3.35 (1.54)	0.88			
i1	**.628**				4.20 (0.85)	0.87			
i10	**.615**				3.87 (0.75)	0.86			
i13	**.508**				3.54 (1.57)	0.86			
i44	**.494**				4.36 (0.95)	0.59			
i2		**.679**			4.59 (0.72)		0.52		
i19		**.674**			3.25 (1.26)		0.62		
i11		**.584**			3.93 (0.71)		0.85		
i27		**.565**			3.52 (1.58)		0.67		
i37		**.472**			4.06 (0.65)		0.82		
i28			**.598**		4.45 (0.83)			0.69	
i21			**.511**		4.48 (0.87)			0.82	
i14			**.507**		4.20 (0.62)			0.58	
i12			**.504**		4.58 (0.81)			0.70	
i7			**.389**		3.14 (1.25)			0.75	
i41				**.925**	3.17 (1.24)				0.99
i40				**.860**	3.12 (1.29)				0.91
i42				**.853**	3.21 (1.10)				0.87
Eigenvalue	13.51	3.02	2.68	1.93	AVE	**0.67**	**0.50**	**0.51**	**0.85**
Variance explained (%)	15.62	12.63	11.91	6.79	CR	**0.91**	**0.83**	**0.80**	**0.95**
Alpha coefficient	0.91	0.88	0.81	0.81					

Table 1 reveals that 5 measurement items were highly loaded into Factor 1 which related to the components *autonomy* and *characteristic role* of SR. Thus, this factor was labeled as *Autonomy and Self-Initiation* (ASI). The second factor was defined by 5 items that related to the participants' understanding of what competencies can be possessed through their participation in competency-enhancing development activities. Therefore, *Sense of Agency* (SA) was chosen as the appropriate label for this factor. The 5 items with a high loading on Factor 3 tend to assess the participants' self-reflection and awareness. For this reason, Factor 3 was labeled as *Self-Awareness and Evaluation* (SAE). All three remaining items in the last factor contained a component of creatively managing the development process in a learning or training environment. Thus, Factor 4 was labeled as *Self-Management*(SM).

The descriptive analysis in Table 1 reveals that the overall perceptions of SR yielded an average mean of 3.87 on a 5-point Likert Scale, with the average standard deviation of 1.03. The participants showed a high level of agreement, ranging from 3.12 (neutral) to 4.59 (somewhat agree), with all 18 items on the SRS. For example, the questionnaire item that the respondents most agreed with (had the highest mean score) was I12 (M = 4.59, *SD* = 0.72), followed by I37 (M = 4.58, *SD* = 0.81) could be associated with the participants' positive behaviours during the process of developing their own employability competencies. The items with the lowest mean score were I42 (M = 4.59, *SD* = 0.72), I40 (M = 4.59, *SD* = 0.72) and I41 (M = 4.59, *SD* = 0.72), however, indicate that the participants may have difficulties to manage perceived barriers or had not enough understanding of the usefulness of the SR in their development process.

At the final step to assess the dimensionality of SR, a CFA was employed for seeking the evidence to validate the retained factors. Therefore, a CFA model, a first-order measurement model, was developed and consisting of 18 items in the Self-Responsibility Scale (SRS) which were loaded on four factors of SR: ASI, SA, SAE, and SM (Figure 1).

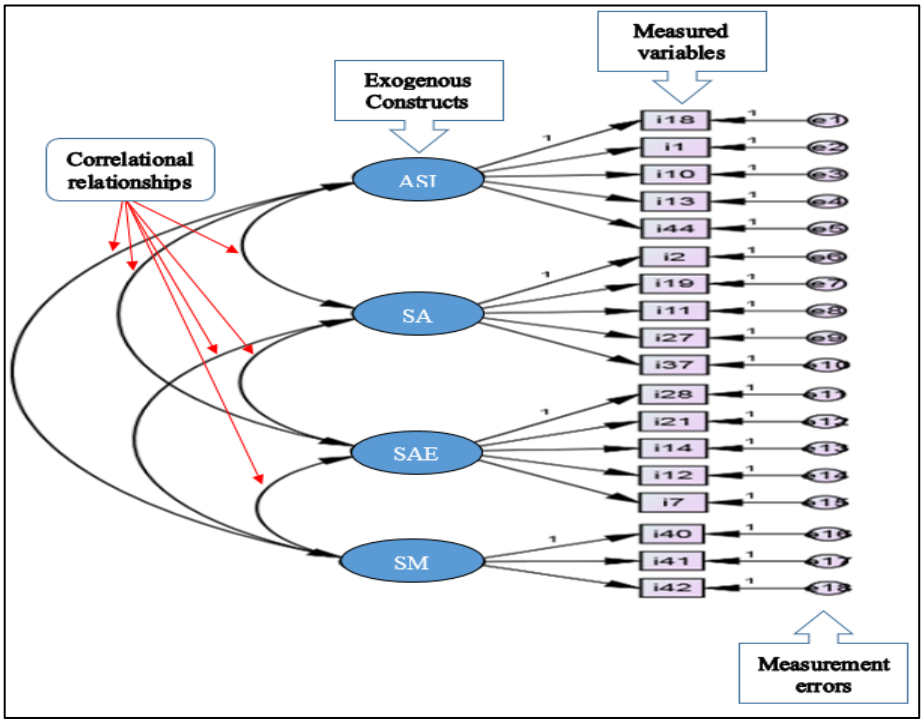

Figure 1. Path diagram of the first-order measurement model

The components of CFA Model are described as follow:

(1) The four factors of SR were represented by four ellipses and labeled as ASI, SA, SAE, and SM.
(2) The two-way curve arrows indicated that the four factors were the exogenous constructs which correlated each other without any structural relationship.
(3) These four factors were also considered as the first-order constructs loaded by 18 measured variables or indicators. These 18 indicators were represented by 18 rectangles and each indicator was only loaded on one factor. The measurement errors (e1-e18) were uncorrelated each other.

To appropriately examine the multidimensionality of SR, the evidence of CFA Model was obtained through a process of model-fitting. Correspondingly, the common fit indices are *chi-square* (χ^2) statistic, *goodness-of-fit index* (GFI), *adjusted goodness-of-fit index* (AGFI), *root mean square error approximation* (RMSEA), *Tucker-Lewis index* (TLI) and *comparative fit index* (CFI) [20]. Of those measurements, the CFI and RMSEA are most recommended with high values for CFI (above 0.9) and low value of RMSEA (between 0.03 to 0.08) which are considered as good fit [11]. The summary of fit indices is shown in Table 2.

Table 2 shows that the value of AGFI (0.97), CFI (0.99) and TLI (0.99) was close to 1.00 which indicates that the model adequately fitted the sample. The obtained RMSEA value of 0.03 also provides an evidence of CFA Model good fit. Furthermore, the value of normed chi-square (1.93) also indicated the optimisation of CFA Model. Therefore, it can be concluded that the hypothesised model (combined: χ^2 [1056] = 183.82, $p < 0.01$; RMSEA = 0.03; CFI = 0.99); (students: χ^2 [568] = 82.96, $p < 0.01$; RMSEA = 0.01; CFI = 0.99) and (alumni: χ^2 [488]: = 124.61, $p < 0.01$; RMSEA = 0.04; CFI = 0.99) appropriately represents SR as a four factorials structure.

Table 2. Summary of fit indices for Model 2

Fit Indices	Data sources		
	Combined	Students	Alumni
χ^2	183.82	82.96	124.61
Df	95.00	95.00	95.00
P	0.00	0.00	0.00
CFI	0.99	0.99	0.99
RMSEA	0.03	0.01	0.04
TLI	0.99	0.99	0.97
AGFI	0.97	0.97	0.94
AIC	335.82	234.69	324.61
χ^2**/df**	1.93	0.87	1.31

In addition, the results of an analysis of regression weights showed that all critical ratio values of combined data were above 1.96. Correspondingly, all 18 measurement items have a factor loading ranging from 0.52 (moderate) to 0.99 (large), see Table 1, then all these items were also considered as adequate to be the indicators of SR. These findings were also supported by the Composite Reliability values of ASI, SA, SAE and SM in Table 1 were 0.91, 0.83, 0.80 and 0.95, respectively. Since these values were above the recommendation (0.7), then the SRS was indicated having a strong internal consistency.

To provide an evidence to support CFA Model convergent validity, the standardized factor loadings in Table 1 were tested separately using the obtained responses from student and alumni (Table 3).

Table 3. The standardized factor loadings for student and alumni

Indicator	Students Standardised Factor Loadings				Alumni Standardised Factor Loadings			
	ASI	**SA**	**SAE**	**SM**	**ASI**	**SA**	**SAE**	**SM**
I18	0.92				0.72			
I1	0.90				0.71			
I10	0.89				0.77			
I13	0.88				0.83			
I44	0.60				0.61			
I2		0.52				0.64		
I19		0.64				0.65		
I11		0.92				0.79		
I27		0.67				0.66		
I37		0.86				0.79		
I28			0.65				0.68	
I21			0.82				0.75	
I14			0.63				0.68	
I12			0.70				0.70	
I7			0.75				0.73	
I41				0.99				0.90
I40				0.92				0.94
I42				0.85				0.98
AVE	**0.71**	**0.54**	**0.51**	**0.84**	**0.53**	**0.50**	**0.50**	**0.88**
CR	**0.92**	**0.83**	**0.81**	**0.94**	**0.81**	**0.82**	**0.80**	**0.96**

Note. ASI = Autonomy and Self-Initiation, SA = Sense of Agency, SAE = Self-Awareness and Evaluation, SM =Self-Management, AVE = Average Variance Extracted and CR = Composite Reliability

In order to provide the evidence of convergent validity, Hair. Jr, Black [12] suggest that the values of the standardised loading estimates, CR and AVE should be above 0.5 and the value of CR should be greater than AVE. Correspondingly, all values of both the student and alumni participants standardised factor loadings in Table 3 yielded the suggested value ranging from 0.52 to 0.99. Since all the CR scores were above 0.70 then all four factors of SR are reliable. In addition to these internal reliability, all AVE values were also found below the values of CR. Collectively, these results provide the evidence to support the convergent validity of CFA Model. Table 4 was developed to provide the evidence of discriminant validity. In this regard, there two rules need to be followed. First, the values of MSV and ASV should be less than the values of AVE [21]. Second, the value of AVE square root in the correlation matrix should be above the correlation values between a set of two factors [13].

Table 4. CFA Correlation matrix

	1	**2**	**3**	**4**	**MSV**	**ASV**	**AVE**	$\sqrt{AVE}$
Combined responses								
1.ASI	**1**				0.43	0.15	0.67	0.82
2.SA	0.09	**1**			0.02	0.01	0.50	0.71
3.SAE	0.10	0.69	**1**		0.03	0.02	0.51	0.71
4.SM	0.62	0.12	0.19	**1**	0.43	0.16	0.85	0.92
Students responses								
1.ASI	**1**				0.44	0.15	0.71	0.84
2.SA	0.07	**1**			0.01	0.01	0.54	0.73
3.SAE	0.06	0.69	**1**		0.01	0.01	0.51	0.71
4.SM	0.64	0.06	0.04	**1**	0.44	0.15	0.85	0.92
Alumni responses								
1.ASI	**1**				0.410	0.138	0.53	0.73
2.SA	0.62	**1**			0.003	0.002	0.50	0.71
3.SAE	0.61	0.69	**1**		0.004	0.002	0.50	0.71
4.SM	0.58	0.40	0.49	**1**	0.410	0.139	0.88	0.94

Note. MSV = Maximum Shared Variance, *ASV* = Average Shared Variance

The evidence of the validation process for CFA Model in Table 4 was developed using the recommendation rules. To provide the evidence using the first rule, for example, the AVE values for all sources of data were found greater than the corresponding values of MSV and ASV. To meet the requirement of the second rules, all the correlation values in Table 4 were carefully examined and compared with the square root of AVE scores. Correspondingly, all the values of AVE square root were above the correlation values. Using the combined responses, for instance, the value of AVE square root for ASI (0.82) was above the values of correlation of ASI-SA ($\phi_{ASI,SA}$ = 0.09), ASI-SAE ($\phi_{ASI,SAE}$ = 0.1) and ASI-SM ($\phi_{ASI,SM}$ = 0.62). Therefore, CFA Model demonstrated an adequateness of the discriminant validity. Furthermore, Table 4 also provides the evidence for nomological validity. The correlation matrix of the combined responses shows the correlations of ASI-SM and SA-SAE were strong and positive ($\phi_{ASI, SM}$ = 0.62, $\phi_{SA, SAE}$ = 0.69, respectively). These correlations remained true for student and alumni participants. These results have two implications. First, the capability of a learner to internalize his/her extrinsic motivations into controlled actions would lead to an effective capacity for managing his/her personal competency development. Consequently, he/she would tend to be more competent, autonomous, persistence, motivational and less dependent on friends, families, and instructors. In short, any change in a learner's level of ASI will influence his/her level of SM or vice versa.

Another implication is related to the freedom of learner to determine the best contribution to his/her own development process. When a learner has decided to practice SR, the first step of internalization requires him/her to use the sense of agency for recognizing and identifying choice-related conscious behaviours (e.g. self-organise, self-regulate, self-control, self-reflective, self-confidence). As the sense of agency emerged from the extrinsic motivation of bringing change to his/her life, a self-responsible learner also has developed self-awareness of his/her contribution. This implication is supported by a solid correlation value between SA and SAE and, therefore, the recognition of SA is followed by the development of SAE or vice versa.

The other correlations of the combined responses in Table 4were also positive ($\phi_{ASI,SAE} = 0.1$, $\phi_{SA,SM} = 0.12$, $\phi_{SAE,SM} = 0.19$, $\phi_{ASI,SA} = 0.09$), although, the interrelationships were weak. Similar results were also found in the student participants' responses. Interestingly, the alumni responses indicate strong interrelationships among these correlations (see Table 4). Thus, the alumni tend to understand the importance of SR for employability competencies development because they had experienced difficulties to enter the labour market. Therefore, the SR practice that appears to be best developed in development environments that could help learners to possess a series of competencies that they will confront in their real-life situation. By implication, it is necessary for competency development activities, both at the individual unit of instruction and at the whole program level, to be constructed in a manner which will assist in transitioning learners from their development environment to the workplace. This interpretation is also consistent with the focus of engineering education and training system, in which preparing students to enter the professional practice.

3.1. The implication to the Indonesian maritime engineering education practice

Although the participants in this study were not Indonesian student and alumni, nevertheless this paper could provide a significant contribution to the Indonesian maritime education practice. The concept of SR in employability competencies development is needed within Indonesian context because some evidence indicates that a number of problems among the Indonesian workforce are related to a commitment to personal competency development (see Table 5).

Table 5. The negative issue among Indonesian maritime engineering workers

Issue	Sources
Low working productivity Lack of skills	Wood, Trigunarsyah [23] Amar and Zain [24] Windiarti, Ferris [25]
Lack of management commitment Lack of training	Amar and Zain [24] Willard, Coffey [26]
Lack of capability to use modern working tools Insufficient education qualification Lack of creativity	Amar and Zain [24] Wahdiaman., Setiadi [27]
Lack of cross-cultural adaptation	Windiarti, Ferris [28]

Several serious issues in Table 5 have been faced by Indonesian maritime engineering graduates, particularly their quality to compete in the global labour market. For example, Wood, Trigunarsyah [14] in their observation in Indonesia argue that the major issue faced by the Indonesian labour market is the lack of skilled workers. This issue, however, observed by Amar and Zain [15] is caused by the incapability of Indonesian workers to use a modern working tool. Therefore, they suggest Indonesian workers have a commitment to a personal development process. Correspondingly, their findings also indirectly indicate that Indonesian maritime engineering students need to accept SR for their competency development process. However, Windiarti, Ferris [16], argue that forcing workers to commit to personal competency development without considering their cultural orientation might meet with resistance. Therefore, they further highlight the need for Indonesian engineers to increase their self-awareness of national cultural background which could increase work productivity.

Correspondingly, this study has indicated two applicable implications for Indonesian educators to help their students become self-responsible learners. First, Indonesian students need to modify their cognitive structures to where they would accept responsibility for their development process and progress. This shifting of cognitive structures, however, may not occur if they have no confidence in their own abilities. Therefore, they should practice regular self-reflection which will help them to create their own approaches to improve their competencies. The self-reflection process could help them to develop the ability to reflect on their current position in the labour market in a way in which they view themselves as active agents with the power to take self-development actions that can result in a material change to their situation. Indonesian students should learn from the given examples by the Australian maritime engineering alumni participants who understood the importance of SR and internalized the external motivations of their engagement in the competency development process into positive behaviours. Through these examples, Indonesian students could learn how effectively accept SR in managing the process of developing appropriate employability competencies for their career.

The second implication for Indonesia is that when confronted by perceived barriers, it is important for learners to reconstruct their development environment using their analytical skills to make critical judgments about a range of developmentally appropriate activities. Instead of passively waiting to be directed, self-responsible learners should take the initiative in construing and making their own understanding of the appropriate activities to overcome their perceived barriers. Ultimately, the initiative has been identified as one important action that could help a learner change his/her motivations and behaviours, become self-determined, autonomous and actively engage in his/her development environment. Hence, self-initiation action, directed by initiative and analytical skills, will help learners gain a greater level of understanding of their career objectives and, therefore, they could choose appropriate career behaviours and actions for the labour market.

4. Conclusion

This paper has outlined the way to promote the concept of SR in the employability competencies development process by examining the perceptions of the participants regarding the importance of the concept. In addition to this examination, this paper also examined the multidimensionality of SR the structural and construct validity on CFA Model. The findings of the structural validity test revealed that CFA Model appropriately represented SR as a four-factor construct comprising ASI, SA, SAE, and SM. The descriptive statistics indicated that the engagements of both students and alumni in competency development were extrinsically motivated. However, the statistics also indicate that the alumni participants have internalized their motivation compared to the student participants. For example, the student participants were found with a high level of dependency on their friends, families, and instructors, while the alumni participants showed more independence in navigating their competency development. Consequently, when the student participants were confronted by perceiving barriers, they failed to foster the concept of independence in the development process and tended to become passive, lack confidence, lack persistence, were less motivated and less competent. In contrast, the alumni participant took the initiative when they were confronted by perceiving barriers and, therefore, they showed more persistence and motivation. In addition to this multidimensionality, the construct validity tests provided strong evidence to support that CFA Model was reliable and valid.

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