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# **Sustainability for Corporate Entrepreneurship-driven Large Corporations**

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### **Author's contribution**

*The sole author designed, analysed, interpreted and prepared the manuscript.*

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## **ABSTRACT**

With the increasing importance of corporate entrepreneurship and sustainability to large corporation, this study helped by confirming the necessity to focus on the driving forces of corporate entrepreneurship, namely the manager characteristics, organization antecedents, and external environment. This is a quantitative research with a descriptive and causal design that is geared towards a path analytic model as an output, using the basic criteria of corporate entrepreneurship to the sustainability of large corporations. Path analysis was used as the main analytical tool to gain insight on the degree of influence of each driving force and its impact on corporate entrepreneurship in large corporations and to understand its link to sustainability of large corporations. From the results, focusing on the driving forces of corporate entrepreneurship could also improve the sustainability of large corporations. Furthermore, it has been confirmed that corporate entrepreneurship of large corporation positively and significantly influence the sustainability of large corporations. Thus, the management of large corporations should consider formulating proper company strategies to promote the driving forces of corporate entrepreneurship and these would positively influence their sustainability. In addition, the best driver of corporate entrepreneurship and of sustainability is organization antecedents which focus on organization structure, management supports and risk-taking tolerance.

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## 1. INTRODUCTION

Corporate entrepreneurship is becoming increasingly important for the competitiveness of corporations [1,2,3,4,5] as they face dynamic competition unleashed by globalization [6,7,8,9]. Corporate entrepreneurship, which means entrepreneurial activities at the level of established organization, has been recognized as an important element in organizational and economic development and performance which impacts firm survival and management philosophy.

Corporate entrepreneurship has long been recognized as a potentially viable means for promoting and sustaining corporate competitiveness [10]. Entrepreneurial behavior by management and employees could lead to competitive advantage and sustainability [11]. In a study on the South African information and communications technology sector, corporate entrepreneurship dimensions are crucial for the organization to enhance its performance and to enable it to sustain its degree of entrepreneurial orientation. There is a strong positive association between level of corporate entrepreneurship and company performance [12].

From a study of ship management in Hong Kong, corporate entrepreneurship leads to sustainable value creation. Corporate entrepreneurship, when conducted effectively, can be a significant contributor of sustainable value creation [13]. As such, there is a positive association from corporate entrepreneurship to firm performance and sustainable value creation. Sustainability can be embedded into a corporate entrepreneurship framework which may result in the discovery or creation, assessment, and exploitation of entrepreneurial opportunities.

This paper sought to explore a model of sustainability for corporate entrepreneurship-driven large corporation. For the basic driving forces of corporate entrepreneurship, the characteristics of the manager, the organization's antecedents, and the external environment are considered as the main contributors of corporate entrepreneurship. With the value generated by the corporate entrepreneurship, the sustainability of a large corporation was measured in terms of the three pillars of sustainability - economic sustainability, social sustainability, and environmental sustainability.

Although corporate entrepreneurship is closely related to company performance and competitiveness and sustainability can be embedded into corporate entrepreneurship, the relationship of corporate entrepreneurship with sustainability is not clear. This paper explored the linkage between corporate entrepreneurship and sustainability in two ways. First, it explored the extent of impacts of the driving forces to sustainability and second, it also explored the possible path model of the driving forces behind corporate entrepreneurship to sustainability.

As a summary, the main theme of the study was on corporate entrepreneurship. One of the two themes - the driving forces - includes the manager characteristics, organization antecedents and external environment. The other theme, sustainability explored the impacts of corporate entrepreneurship specifically with regard to economic sustainability, social sustainability, and environmental sustainability. Through the review and analysis on the two main themes, a path model of sustainability was established for corporate entrepreneurship-driven large corporations. This will, hopefully, enable them to successfully find the link between the driving forces and the pillars of sustainability.

Through the study on corporate entrepreneurship, this paper wanted:

- 1) To determine how and which driving force impacts corporate entrepreneurship in large corporations.
- 2) To determine how and which driving force affects the corporate sustainability of large corporations.
- 3) To identify the possible path model of sustainability for the corporate entrepreneurship-driven large corporations.

In order to gain the understand the relationship between corporate entrepreneurship and its driving forces as the independent variables and the sustainability and its elements as the dependent variables, a path analysis approach was used. The driving forces of the corporate entrepreneurship include manager characteristics, organization antecedents, and external environment. The elements of sustainability include economic sustainability, environmental sustainability, and social sustainability.

The results of the path analysis would hopefully indicate the impact of the driving force on corporate entrepreneurship in large corporations, as well as on corporate sustainability. At the end of the path analysis, a path model of sustainability for corporate entrepreneurship-driven large corporation was developed to highlight the path model of sustainability for large corporations while taking into consideration the link from corporate entrepreneurship to sustainability.

There are three hypotheses in the study. The first hypothesis dealt with the independent variables, namely, characteristics of manager, organization antecedents, and external environment. This paper identified the relationship of each of the driving force to the corporate entrepreneurship in a large corporation. The hypothesis is sub-divided into three parts to measure the relationship of each driving force to the corporate entrepreneurship in a large corporation.

Hypothesis 1a: The characteristics of managers influence the corporate entrepreneurship in a large corporation.

Hypothesis 1b: The organization antecedents influence the corporate entrepreneurship in a large corporation.

Hypothesis 1c: The external environment influences the corporate entrepreneurship in a large corporation.

The second hypothesis dealt with the impact of the dependent variable, namely sustainability, which was explored in terms of economic sustainability, social sustainability, and environmental sustainability. This paper tried to confirm the relationship of each of the driving forces to the sustainability in a large corporation. The hypothesis is sub-divided into three parts to measure the relationship of each driving force to the sustainability in a large corporation.

Hypothesis 2a: The characteristics of a manager influence the sustainability of a large corporation.

Hypothesis 2b: The organization antecedents influence the sustainability of a large corporation.

Hypothesis 2c: The external environment influences the sustainability of a large corporation.

The third hypothesis was for the path model of sustainability. This paper wanted to find out the most logical path of each driving force for corporate entrepreneurship. In addition, to merely show the relationship between corporate entrepreneurship and sustainability, this paper indicated the best path for the driving forces in corporate entrepreneurship to the elements of sustainability.

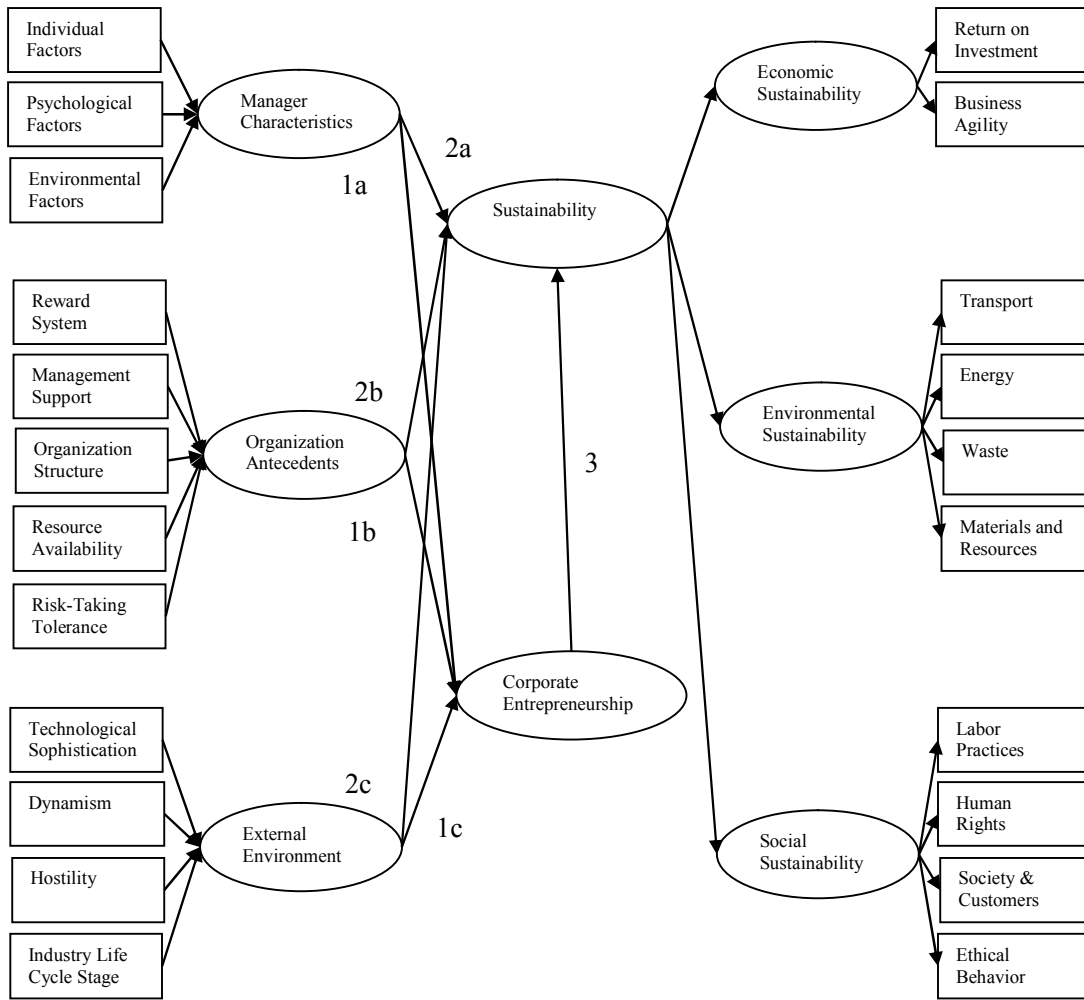
Hypothesis 3: Corporate entrepreneurship results to sustainability of a large corporations.

From the conceptual framework of corporate entrepreneurship and the sustainability, it was necessary to develop a model for the path analysis. Between corporate entrepreneurship and its driving forces as the independent variables and sustainability and its elements as the dependent variables, multiple dimensions became possible between the independent and the dependent variables that may pave the way to several structural equation model. As mentioned, a path analysis approach was deemed more appropriate in exploring the relationship. Path analysis is a method employed to determine whether or not a multivariate set of nonexperimental data fits well with a particular causal model. Furthermore, the results of the path analysis could also indicate the impact of the driving force of corporate entrepreneurship in the large corporations, as well as their impact to corporate sustainability to assist the management of large corporations in designing and strategizing proper policies to promote sustainability through corporate entrepreneurship.

As such, it was necessary to develop a path analysis model between corporate entrepreneurship and the sustainability. This suggested path analysis model between corporate entrepreneurship and sustainability was deemed appropriate in measuring the relationship of corporate entrepreneurship and its driving forces and the sustainability and its elements. The path analysis model between corporate entrepreneurship and sustainability is shown in Fig. 1.

## 2. REVIEW OF LITERATURE

Previous studies have shown that there are three main driving forces of corporate entrepreneurship, namely, manager characteristics, organization antecedents, and



**Fig. 1. The hypothesized path analysis model between the driving forces of corporate entrepreneurship and sustainability**

external environment. For a manager to pursue uncertain opportunities as an entrepreneur, she must believe that she will gain more than what is being given up [14]. The entrepreneur is more likely to exploit an opportunity according to the value that she expects to receive from exploitation. This expected value is influenced by three factors: the nature of the opportunity and the industry and institutional environment; psychological factors; and the non-psychological characteristics of the entrepreneur [15].

Shane [15] suggested the non-psychological and psychological factors which affect the characteristics of the entrepreneur. Manager characteristics [16,17,8] involve the pro-activeness, risk-taking, entrepreneurial attitudes, vision and actions, strategic alliance, corporate

venturing, viability and competitiveness, innovation concept, entrepreneurial management, and, entrepreneurial personality as the key factors for entrepreneurship. Those are mainly covered by the Shane's factors. The element of manager characteristics is expected to favor the individual entrepreneurship as the individual factors such as, being well-educated, having a strong career experience, and the age will favor the exploration of an innovative concept for his entrepreneur business. Similarly, with the psychological factors such as personality and motivations and the existing good economic environment, the manager is expected to favor exploration of the innovation concept for individual entrepreneurship. As such, in terms of the corporate entrepreneurship in a large corporation, the element of manager

characteristics could be considered as the barrier in corporate entrepreneurship.

The future of an ongoing entrepreneurial strategic approach is contingent upon individual members continuing to undertake innovative activities and upon positive perceptions of the strategy by the organization's executive management, which in turn will support further allocations of necessary organizational antecedents [4]. As per Hornsby, Kuratko, and Zahra [18], there are five key internal organizational factors that influence managers to initiate corporate entrepreneurship activities, namely: effective reward system, top management support, resource availability, organization structure and risk taking, and tolerance for failure.

When an organization chooses a corporate entrepreneurial strategy, organization antecedents must be present to influence a middle manager's decision to behave entrepreneurially. The greater the degree the middle manager perceives in the existence of each of the organization antecedents, the higher the probability of the manager's decision to behave entrepreneurially. As a whole, the element of entrepreneurship supports from the organization antecedents would cause the positive impacts to the decision of corporate entrepreneurship and thus, could be considered as the driver of the corporate entrepreneurship.

In addition to the organization antecedents and the characteristics of the manager, the other area affecting the decision of corporate entrepreneurship against individual entrepreneurship would be the external environment. According to Covin, Green and Slevin [19] and Giudici and Reinmoeller [20], the three primary environmental variables considered in existing entrepreneurial orientation are environmental munificence, dynamism, and hostility. These variables have been noted to influence the entrepreneurial orientation construct in relationship with performance, as well as their impact on the relationship between individual dimensions of innovativeness, pro-activeness and risk-taking, and firm performance. For a more comprehensive way, according to Kuratko, Hornsby and Covin, [4], the basic dimensions of a firm's external environment include environmental technological sophistication, environmental dynamism, environmental hostility, and industry life cycle stage. High-tech industries are commonly

composed of disproportionate numbers of entrepreneurial firms.

In recent years, the concept of sustainability has grown in recognition and importance [21]; Gupta & Kumar; [22,23,24,25,26]. The pressure on companies to broaden its reporting and accountability from economic performance for shareholders, to sustainability performance for all stakeholders has increased [27]. Sustainability can be defined as adopting business strategies and activities that meet the needs of the enterprises and their stakeholders today while protecting, sustaining, and enhancing the human and natural resources that will be needed in the future [28].

Sustainability is about the balance or harmony between economic sustainability, social sustainability, and environmental sustainability [29]. Sustainability is about integrating economical, environmental, and social aspects [30]. This refers as the three pillars of sustainability: Social, Environmental, and Economical. The concept suggests that three dimensions are interrelated may therefore influence each other in multiple ways.

The economic sustainability refers to the impact of the organization's business practices and pertains to the capability of the economy as one of the subsystems of sustainability for survival. It also pertains to the ability to evolve in order to support future generations. The economic sustainability ties the growth of the organization to the growth of the economy in order to see how well it contributes to the economic system. In other words, it focuses on the economic value provided by the organization to the surrounding system to prosper and promote for its capability to support future generations.

The environmental sustainability, on the other hand, refers to the practices by organizations not compromising the future environmental resources and pertains to the efficient use of energy resources, reducing greenhouse gas emissions, and minimizing the ecological footprint. Similar to social sustainability, environmental sustainability impacts the business sustainability of the organization. During economic downturn, organizations with practices that are geared towards protecting the environment and improving the social well-being of the stakeholders while adding value to the shareholders, have financially outperformed other industries. The financial advantages are

primarily from reduced operational costs and increased revenues from the development of innovative green products.

Lastly, Social sustainability refers to conducting beneficial and fair business practices that provide value to the society and give back to the community. Aside from the moral aspect of being good to the society, disregarding social responsibility can affect the performance and sustainability of the business. The social performance focuses on the interaction between the community and the organization and addresses issues related to community involvement, employee relations, and fair wages.

With the increasing importance of entrepreneurship in the strategic management process and the different dimensions in exploring entrepreneurial opportunity in a large corporation, the study on the driving forces behind corporate entrepreneurship in large driven corporations is the key question in the field of entrepreneurship. From the decision-making ecology of Baumann, Dalgleish, Fluke, and Kern [31], the driving forces are from the decision-maker factors, the organizational factors, and the external factors.

The decision-maker factor is focused on the manager and how he reacts or explores entrepreneurial opportunities. The organizational factor is focused on the organization's antecedents and how important it is in developing entrepreneurship in the company. The external factor refers to the external environment and its impact was studied in order to see how it affects the environment when developing entrepreneurial opportunities. Overall, this paper explored how each force affect or drive corporate entrepreneurship in a large corporation.

### 3. RESEARCH METHODS

This is a quantitative research with a descriptive and causal design that is geared towards a path analytic model as an output, using the basic criteria of corporate entrepreneurship to the sustainability of large corporations. Developed by Sewall Wright (1934), path analysis is a method employed to determine whether or not a multivariate set of nonexperimental data fits well with a particular causal model. Path analysis was used as the main analytical tool to gain insight on the degree of influence of each driving force and its impact on corporate entrepreneurship in large

corporations and to understand its link to sustainability of large corporations.

The large corporations in the Philippines were set as the population while the employees of the large corporations in the Philippines were set as the target respondents. As per the Securities Regulation Code Rule 68 by the Securities and Exchange Commission in the Philippines, large corporations are large accountable entities which usually have total assets of more than P350 Million or total liabilities of more than P250 Million.

The research was conducted in Manila, Philippines. Philippines is one of the developing countries in the world that the three main sectors – agriculture, industry, and services, are all important. With the development of the countries, the service sector is growing relative to the rest of the economy. Thus, for the survey, this paper focused on the service sector of the Philippine Stock Exchange. The service sector was chosen based on the concept that countries with primarily service-based economies are considered to be more advanced in terms of income. In this research on corporate entrepreneurship and sustainability, the service sector was a good representation of the overall economy of the country [32].

Based on the procedures in conducting the questionnaire, the respondents were from the 39 companies listed in the Philippine Stock Exchange as service sector out of a total of 265 listed companies in the Philippine Stock Exchange as of July 2015. A total of 313 samples were used in this survey for the path analysis because the required sample size is generally 300 for structural equation modelling [33]. The 313 samples were distributed based on the total number of employees for each subsector.

The questionnaire was made by the proponent and it consists of 78 questions. There are 12 questions for the section on manager characteristics (on individual factors, psychological factors and environmental factors), 20 questions for the section of the organization antecedents (on reward system, management support, organization structure, resource availability and risk taking tolerance), 16 questions under the section of external environment (on technological sophistication, dynamism, hostility and industry life cycle), 6 questions under the section of corporate

entrepreneurship, 5 questions under the section of economic sustainability (on return of investment and business agility), 8 questions under the section of environmental sustainability (on transport, energy, waste, and materials and resources), and 11 questions under the section of social sustainability (on human rights, labor practices and decent work, society and customers and ethical behavior). The response for each question and its sub-part was weighed using Likert's 4-point scale with the following equivalents:

- 4 – Strongly Agree
- 3 – Agree
- 2 – Disagree
- 1 – Strongly Disagree

For the modeling of research, partial least square structural equation modeling is used through the usage of WarpPLS software. SPSS would be used to compute the descriptive statistics. WarpPLS, version 5.0 (released 2015), were used for Partial Least Square Structural Equation Modeling (PLS-SEM) as WarpPLS is user friendly software which is good in the computation of Partial Least Square Structural Equation Modeling. Furthermore, WarpPLS is internationally acceptable Software for Partial Least Square Structural Equation Modeling (PLS-SEM) while the below publications are some examples of using WarpPLS in the empirical studies and researches [34,35,36,37,38]. The Partial Least Square Structural Equation Modeling (PLS-SEM) is used as the constructs in the model of corporate entrepreneurship and sustainability are both formative and reflective. Furthermore, the goal of the research is to explore the best model and possible theory to explain the variables, that is, to explore a possible theory. As per Hair, Ringle,

and Sarstedt [33] and Hair, Hult, Ringle and Sarstedt [39], the Partial Least Square Structural Equation Modeling (PLS-SEM) would be more appropriate when the constructs are both formative and reflective and with the objective to explore the possible theory.

#### 4. RESULTS

The Partial Least Square Structural Equation Modeling (PLS-SEM) method was used to process data from 313 respondents to review the relationships of the driving forces to corporate entrepreneurship and sustainability. The results of path analysis and the path coefficients from the Partial Least Square Structural Equation Modeling (PLS-SEM) running on the WarpPLS System 5.0 are shown in Fig. 2 and Table 1.

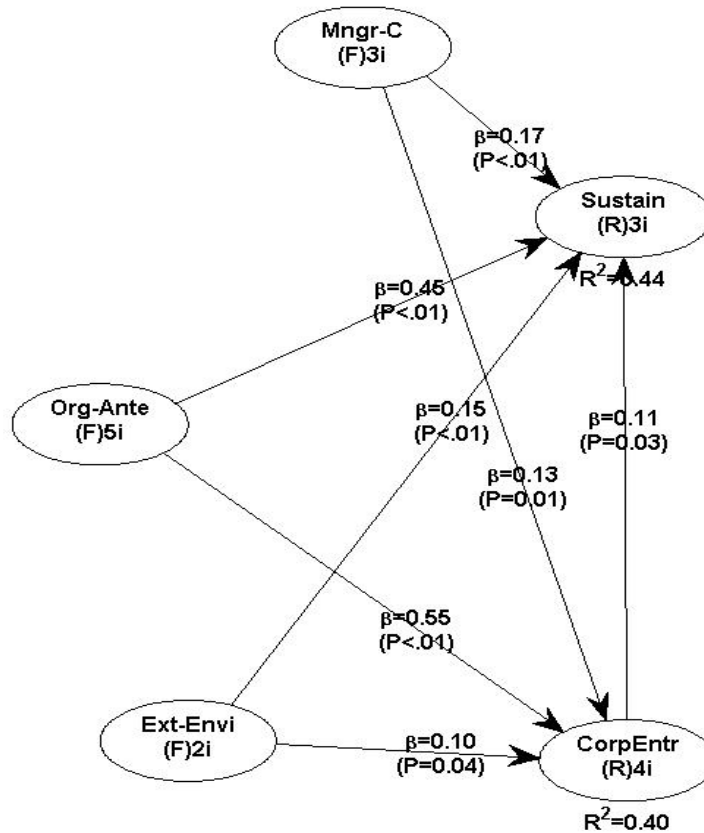
Six global model fit and quality indices are provided: average path coefficient (APC), average R-squared (ARS), average adjusted R-squared (AARS), average block variance inflation factor (AVIF), average full collinearity VIF (AFVIF), and Tenenhaus GoF (GoF).

The value of average path coefficient (APC) is 0.237 with a P value of less than 0.001. This would mean that the variables are with good predictive and explanatory quality to the model with 0.05 significance level. The value of average R-squared (ARS) is 0.419 with a P value of less than 0.001. This means that the variables are with good predictive and explanatory quality to the model with 0.05 significance level. The value of average adjusted R-squared (AARS) is 0.412 with a P value of less than 0.001. This means that the variables are with good predictive and explanatory quality to the model with 0.05 significance level.

**Table 1. Results of the path coefficients from the PLS-SEM running on WarpPLS System 5.0**

Hypotheses	Path coefficients	SE	p-value	Effect size (f <sup>2</sup> )
H1a: MngrC → CorpEntr	.129	.055	.010	.043
H1b: OrgAnte → CorpEntr	.549	.052	.000	.336
H1c: ExtEnvi → CorpEntr	.100	.056	.034	.020
H2a: MngrC → Sustaina	.172	.055	.000	.072
H2b: OrgAnte → Sustaina	.452	.053	.000	.277
H2c: ExtEnvi → Sustaina	.150	.055	.000	.042
H3: CorpEntr → Sustaina	.106	.056	.029	.047

Note: f<sup>2</sup> is the Cohen's [40] effect size coefficient: .02=small, .15=medium, .35=large.



Model fit and quality indices

Average path coefficient (APC)=0.237,  $P<0.001$   
 Average R-squared (ARS)=0.419,  $P<0.001$   
 Average adjusted R-squared (AARS)=0.412,  $P<0.001$   
 Average block VIF (AVIF)=1.251, acceptable if  $\leq 5$ , ideally  $\leq 3.3$   
 Average full collinearity VIF (AFVIF)=1.511, acceptable if  $\leq 5$ , ideally  $\leq 3.3$   
 Tenenhaus GoF (GoF)=0.478, small  $\geq 0.1$ , medium  $\geq 0.25$ , large  $\geq 0.36$

**Fig. 2. Results on the path analysis model from the PLS-SEM running on the WarpPLS System 5.0**

The value of average block variance inflation factor (AVIF) is 1.251 which is lower than 3.3. This means that the variables do not have significant vertical collinearity. The value of average full collinearity VIF (AFVIF) is 1.511 which is lower than 3.3. This means that the variables do not have significant vertical and lateral collinearity.

The Tenenhaus GoF (GoF) is a measure of the model's explanatory power. It is recommended that Tenenhaus GoF (GoF) be equal to or higher than 0.36. The value of Tenenhaus GoF (GoF) is 0.478 which is higher than 0.6. This shows the high model's explanatory power.

The goodness of fit and quality indices of the structural equation model, as whole, showed strong statistical evidences that the estimates of the structural equation model are acceptable. Based on the criteria discussed on Kock [41], the following goodness of fit and quality indices of the model are within the acceptable range.

The above goodness and fit quality indices confirm the path model as shown in Figure 2, Results on the Path Analysis Model from the PLS-SEM, running on the WarpPLS System 5.0, are considered acceptable and are statistically supported, which confirms the hypothesized path analysis model as shown in Fig. 1.



Regarding the results of each individual path in the path analysis model, as per Table 1, results of the structural model reveal that manager characteristics positively and significantly affect corporate entrepreneurship ( $\beta=.129$ ,  $p<.05$ ,  $f2 = .043$ ). This finding supports the first hypothesis (H1a). Having a positive standardized  $\beta$  coefficient indicates that those with higher scores on the manager characteristics tend to have higher scores on corporate entrepreneurship. Based on Cohen's [40] effect size criterion, manager characteristic has a small extent of effect ( $f2 = .043$ ) on corporate entrepreneurship.

Results of the structural model reveal that organization antecedents positively and significantly affect corporate entrepreneurship ( $\beta=.549$ ,  $p<.05$ ,  $f2 = .336$ ). This finding supports the second hypothesis (H1b). Having a positive standardized  $\beta$  coefficient indicates that those with higher scores on the organization antecedents tend to have higher scores on corporate entrepreneurship. Based on Cohen's [40] effect size criterion, organization antecedent has a medium to large extent of effect ( $f2 = .336$ ) on corporate entrepreneurship.

Results of the structural model reveal that external environment positively and significantly affect corporate entrepreneurship ( $\beta=.100$ ,  $p<.05$ ,  $f2 = .020$ ). This finding supports the third hypothesis (H1c). Having a positive standardized  $\beta$  coefficient indicates that those with higher scores on the external environment tend to have higher scores on corporate entrepreneurship. Based on Cohen's [40] effect size criterion, external environment has a small extent of effect ( $f2 = .020$ ) on corporate entrepreneurship.

Results of the structural model reveal that manager characteristics positively and significantly affect sustainability ( $\beta=.172$ ,  $p<.05$ ,  $f2 = .072$ ). This finding supports the fourth hypothesis (H2a). Having a positive standardized  $\beta$  coefficient indicates that those with higher scores on the manager characteristics tend to have higher scores on sustainability. Based on Cohen's [40] effect size criterion, manager characteristic has a small extent of effect ( $f2 = .072$ ) on sustainability.

Results of the structural model reveal that organization antecedents positively and significantly affect sustainability ( $\beta=.452$ ,  $p<.05$ ,  $f2 = .277$ ). This finding supports the fifth hypothesis (H2b). Having a positive standardized

$\beta$  coefficient indicates that those with higher scores on the organization antecedents tend to have higher scores on sustainability. Based on Cohen's [40] effect size criterion, organization antecedent has a medium extent of effect ( $f2 = .277$ ) on sustainability.

Results of the structural model reveal that external environment positively and significantly affects sustainability ( $\beta=.150$ ,  $p<.05$ ,  $f2 = .042$ ). This finding supports the sixth hypothesis (H2c). Having a positive standardized  $\beta$  coefficient indicates that those with higher scores on the external environment tend to have higher scores on sustainability. Based on Cohen's [40] effect size criterion, external environment has a small extent of effect ( $f2 = .042$ ) on sustainability.

Results of the structural model reveal that corporate entrepreneurship positively and significantly affects sustainability ( $\beta=.106$ ,  $p<.05$ ,  $f2 = .047$ ). This finding supports the seventh hypothesis (H3). Having a positive standardized  $\beta$  coefficient indicates that those with higher scores on the corporate entrepreneurship tend to have higher scores on sustainability. Based on Cohen's [40] effect size criterion, corporate entrepreneurship has a small extent of effect ( $f2 = .047$ ) on sustainability.

As a summary, all the individual paths are positively related and statistically significant. In terms of the size of the impacts, from the effect size and path coefficient, the path from organization antecedents to corporate entrepreneurship shows the highest impact ( $\beta=.549$ ,  $f2 = .336$ ). The second highest impact path is from organization antecedents to sustainability ( $\beta=.452$ ,  $f2 = .277$ ). The other paths are relatively with lower impacts.

In terms of driving the value of sustainability, there are four paths affecting the sustainability in the path analysis model. Based on Cohen's [40] effect size criterion, manager characteristic has a small extent of effect ( $f2 = 0.072$ ) on sustainability. Organization antecedents has a medium extent of effect ( $f2 = 0.277$ ) on sustainability. External environment has a small extent of effect ( $f2 = 0.042$ ) on sustainability. Corporate entrepreneurship has a small extent of effect ( $f2 = 0.047$ ) on sustainability. As such, the highest influence on the value of sustainability is organization antecedents with a medium effect size ( $f2 = 0.277$ ) on sustainability. This would be classified as the best path for sustainability.

#### 4. CONCLUSIONS AND RECOMMENDATIONS

With respect to corporate entrepreneurship, the results of the survey confirm the positive relationships from the manager characteristics, organization antecedents, and external environment to the corporate entrepreneurship. The P values of the manager characteristics to the corporate entrepreneurship, the organization antecedents to the corporate entrepreneurship, and the external environment to the corporate entrepreneurship are all below 0.05 and are therefore statistically significant. In addition, all the path coefficients are positive which means that all three variables are in positive relationships with corporate entrepreneurship.

Therefore, the first three hypotheses from the independent variables and independent variables are confirmed, namely:

- 1) characteristics of a manager positively and significantly affect corporate entrepreneurship (Hypothesis 1a),
- 2) organization antecedents positively and significantly affect corporate entrepreneurship (Hypothesis 1b), and,
- 3) external environment positively and significantly affects corporate entrepreneurship (Hypothesis 1c).

With respect to sustainability, although the relationship between the manager characteristics, organization antecedents, and external environment to sustainability is not clearly stated in the literature review, the results of the survey confirm the positive relationship between the three driving forces to sustainability. The P values of the manager characteristics to sustainability, the organization antecedents to sustainability, and the external environment to sustainability are all below 0.05 and are therefore statistically significant. In addition, all the path coefficients are positive which means that the three variables are in positive relationships with sustainability.

Therefore, another three hypotheses from the independent variables and independent variables are confirmed, namely:

- 4) characteristics of manager positively and significantly affect sustainability (Hypothesis 2a),

- 5) organization antecedents positively and significantly affect sustainability (Hypothesis 2b), and,
- 6) external environment positively and significantly affects sustainability (Hypothesis 2c).

With respect to the relationship between the manager characteristics, organization antecedents, and external environment to economic sustainability, environmental sustainability and social sustainability, the results are varied. For economic sustainability, two of the driving forces of corporate entrepreneurship namely organization antecedents and external environment influence economic sustainability positively. For environmental sustainability, three of the driving forces of corporate entrepreneurship namely manager characteristics, organization antecedents and external environment influence environmental sustainability positively. For social sustainability, two of the driving forces of corporate entrepreneurship namely manager characteristics and organization antecedents influence social sustainability positively while external environment influences social sustainability negatively.

Although the relationship between corporate entrepreneurship and sustainability is not clearly stated in the literature review, the results of the survey confirm the positive relationship from the corporate entrepreneurship to sustainability. The P value of the corporate entrepreneurship to sustainability is below 0.05 and is therefore statistically significant. In addition, the path coefficient is positive which means that the variable is in positive relationship with sustainability.

As such, the last hypothesis from the independent variable and independent variable is confirmed, namely:

- 7) corporate entrepreneurship positively and significantly affects sustainability (Hypothesis 3).

From the above, all the seven hypotheses are confirmed from the results. In terms of the path model of sustainability for corporate entrepreneurship-driven large corporations, the hypothesized path analysis model is confirmed based on the results that all the paths are with P value less than 0.05 and the path model is statistically supported by the fit and quality

indices. Please refer to Fig. 4, The Path Analysis Model from Corporate Entrepreneurship on Sustainability below as the most logical path model on the concepts.

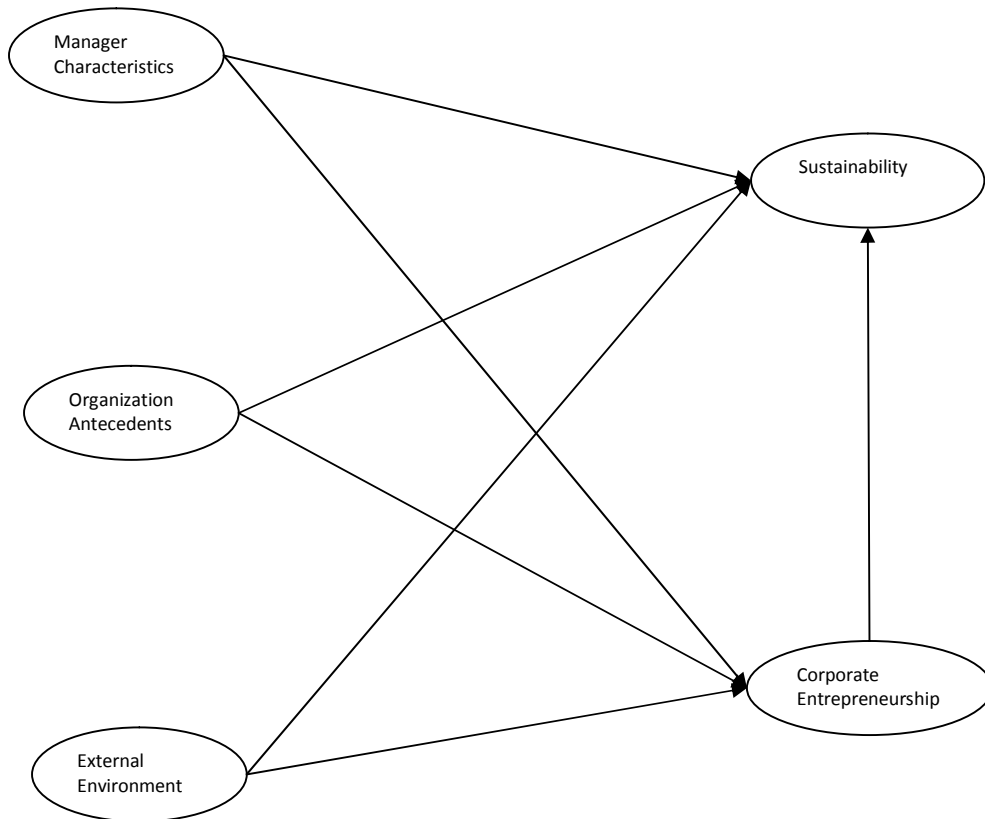
From the combination of corporate entrepreneurship and sustainability, it is shown that manager characteristic, organization antecedents, and external environment positively influence both corporate entrepreneurship and sustainability. Thus, large corporations can promote corporate entrepreneurship and can achieve sustainability at the same time by focusing on the driving forces, namely, the manager characteristics, organization antecedents, and external environment.

In conclusion, these results show that manager characteristics, organization antecedents and external environment positively influence both corporate entrepreneurship and sustainability in large corporations. Furthermore, the results also show that corporate entrepreneurship positively influence sustainability. These findings can help

the management team of large corporations to make proper company strategies and management decisions for the organizations to drive corporate entrepreneurship and hence, enhance the sustainability.

By focusing on manager characteristics, organization antecedents and external environment, the large corporations can achieve their objectives on corporate entrepreneurship and on sustainability. This is a new perspective for the management of the large corporations to drive both corporate entrepreneurship and sustainability at the same time. The results from this study will help the management team in directing the focus and strategizing the policies of the large corporations.

The results will also assist the management of large corporations in designing and strategizing proper policies to promote sustainability through corporate entrepreneurship. This can be done through the management team, who could prepare the proper support systems and the



**Fig. 4. The path analysis model from corporate entrepreneurship on sustainability**

appropriate company policies for the purposes of encouraging corporate entrepreneurship and hence, sustainability. With respect to the board of directors and investors, the results indicate that they should formulate policies that promote and explore innovation and new opportunities which would create value to the organization and hence, increase the potential investment returns to the investors.

From this research to institutionalize sustainability, corporate entrepreneurship should be continuously practiced and encouraged. On the other hand, the best driver of corporate entrepreneurship and of sustainability is organization antecedents which focus on organization structure, management supports and risk-taking tolerance. As mentioned, this research was conducted on the service industry sector in Manila. Thus, the results may not be true for the entire country, and may not apply to the other business sectors.

### COMPETING INTERESTS

Author has declared that no competing interests exist.

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