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Sustaining Innovation: Creativity among Employees of Small and Medium-Sized Enterprises and Students in Higher Education Institutions in Brunei Darussalam

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Abstract: This paper compares creativity experiences and perceptions among employees of small and medium-sized enterprises (SME) and students in higher education institutions (HEI) in Brunei Darussalam. The study was conducted through interactions and surveys to assess (i) understanding and practice of creative tools and techniques; (ii) creativity performance in teams and individuals and (iii) perception of creativity among 39 employees in SME and 68 students from HEI. Statistical analysis was carried out using Pearson's chi-square test for goodness of fit and Cramer's V test to estimate strength tests for correlation. The findings indicate a majority in both groups have not received prior instruction in creativity and that employees of SMEs have less interest in receiving creative instructions. There is consensus among both groups that group work will result in greater creative performance. Ambiguity of customer needs or requirement was a factor most often cited to impede creative performance of teams in SME. Results from this study were used to make recommendations to improve practice and learning creativity in SME and HEI.

1. Introduction

Successful industries and organizations depend on a culture of dynamic idea generation [1] and management of creative individuals. Organizations seek innovative design tools and best management techniques that will optimize value of their products and services. Managing individuals to build an economically dynamic enterprise requires skills and insights that challenge norms of an organization. Consequently, practices that reduce distractions and sharpen focus of creative workforce towards organizational goals are desired. The concept of creativity, associated with chaotic dynamism [2] at first glance, does not provide immediate support towards organizational goals. Hence, it receives passive attention and insufficient policy support necessary to foster its development even when creativity is recognized as fundamental to business success [3]. Traditional methods of conducting businesses are not sufficient to grow Brunei Darussalam's small and medium-sized enterprises (SMEs). Understanding, applying creative principles and processes, as well as design management strategies for the public and private industries are required. With increasing competition for survival and success, organizations cannot maintain a competitive edge by just reaching their target customers alone.

Product functionality has to maintain robust design that serves current and future needs [4]. The skill to invent a new, or transform an existing, product, services, event, or phenomenon into a marketable and thriving design has been key for strategic innovation and product development. Products and services that attract customers, sustain and captivate their interests are built on a platform of consistent evolution. Hence, industries that are not vibrant enough to continually seek cutting-edge techniques to achieve their goals and drawn customers will be left behind. Furthermore, there are challenges from a social point of view. Creative products have to provide socially useful solutions to problems. However, usefulness may not be sufficient if the novelty element is crucial, without which a product would not be creative, even though it might be valuable [5].

In corporate environments, design managers oversee development of products and services and manage the innovation workflow. They also have significant role to play in managing the articulation of business strategy, system of product brands and service values, requiring continuous improvement for customer satisfaction [6], and these often involve the application of design thinking, advanced technology, as well as the management of creative specialists. Csikszentmihalyi [7] noted that creative specialists can be "both rebellious and conservative" and alternating between "smart and naivety" yet they are the driving force for the advancement of the organization. Behavioral imbalances, distractions, and inconsistences are the greater internal barriers towards optimizing creative design strategies. Therefore, identifying and applying the right creative tools to achieve the appropriate management techniques cannot be over emphasized. SMEs that stimulate and sustain a culture of creative thinking will have open innovation and continuous improvement [8].

2. Key Literature Review

2.1. Definition of Creativity

Open innovation is paramount for an organizational performance and survival [9]. Technology, globalization, and increased competition created an environment in which creativity tools are needed in order to cope with situational and economic pressures and frequent changes [10]. Creativity is defined as the ability to produce original, novel, and unexpected work with high quality [11]; since innovation is the implementation of new ideas [10], creativity sustains open innovation. Creativity has traditionally been seen involving the 'four Ps'; namely, person, process, product, and 'press', i.e., social context [12]. Creativity is also defined as a lead to something useful [13]. Recently, realization of creative products has received tremendous attention as it is claimed that "the only coherent way in which to view creativity is in terms of the production of valuable products" [14]. According to Cropley et al. [5], the idea of "product" should be understood in a broad way; products are often tangible and may take the form of written documents, or of machines, buildings and other physical structures such as bridges, vehicles and the like. They can also be intangible such as plans and strategies in business, government, and more general thoughts or ideas—systems for conceptualizing the world—as in philosophy and mathematics or, indeed, all reflective disciplines.

2.2. How Creativity Works

Neil et al. [15] identified preparation, incubation, illumination, and verification as four essential processes to creativity. They discussed challenges of generating innovative ideas towards solving continuously emerging problems in a complex environment and for conflict resolution. Three workshops were designed to encourage different types of creative thinking—explorative, combinatorial, and transformational [15]. The first workshop encourages exploratory creativity, in which participants explore the space of possible ideas to create new ones. Although similar to brainstorming, they encouraged analogical reasoning, common in creative domains, to generate new ideas. The incubation period is needed to handle complexities where participants are introduced to problems and challenges. During a relaxation period, participants unconsciously and consciously combine ideas with a freedom that does not follow linear and rational thinking. Subsequently, a creative

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idea suddenly emerges as they illuminate on strategies and concepts, often at the most unlikely times. This "eureka" effect has been widely reported in creative problem solving [16,17]. It is a necessity to explain why creativity is difficult, so participants knew the challenges they faced. The study supported the hypothesis that creativity can be induced and sustained when inhibitions of participants are removed and they displayed teamwork [15]. Separating exploratory and transformational creativity processes and techniques in different workshops left some ideas underdeveloped. They avoided this by structuring workshops around ideas rather than processes.

2.3. Stimulating Idea Generation Tools in Students of Higher Education Institutes

Tan [18] combines the idea of teaching creativity with learning outcomes to students of Higher Education Institutes (HEI). Certain topics were mapped out for studying creativity. The purpose was to empower the students to explore new dimensions of thinking about aesthetics as manifested in different culture throughout the ages by reading and interpreting a variety of creative works and philosophies. However, traditional teaching methodologies such as reading, lecturing, testing, and memorizing were not considered useful because these activities were not being 'creative' [19]. The concept was to allow radial and non-linear questions, assuming one has the inherent ability for creativity rather than just learning to be creative, encouraging personal observation and conclusion without being judged. Participants were encouraged to discuss their learning in line with similar thriving industries and be able to identify strategies employed by the industries. The study shows that even individuals who have little prior knowledge of creative techniques can be motivated to develop novel initiatives.

2.4. Individual Creativity and Team Work

Organizations face problems today that are too complex for one individual or a mono-disciplinary team to solve [1,20]. Therefore, the past decade has seen an increase in the use of multi-functional collaborative teams by organizations [21]. In response to the increased focus on team work, many collaboration techniques and technology solutions have been developed to enable teams to work together productively. Team collaboration refers to the joint effort of members in achieving a goal. De Vreede et al. [22] explored antecedents of team creativity. A theoretical model called the Team Creativity Model (TCM) was employed to explain the constructs that affect team creativity. They began by introducing the nucleus of their research which was how individual creativity of one team member could be enhanced to impact the entire team. Every member was encouraged to make input without thinking that their ideas were silly or less useful. The study posits that when team productivity is seen as a whole rather than an individual input, it empowers members to have a sense of responsibility and achievement which in turn triggers more creative efforts. It is widely agreed that creativity can be acquired and influenced [1,23]. Each creativity session focused on idea generations. Team creativity occurs during a social process of sense-making and collaboration where one individual's actions may inspire the team to devise and follow a more creative process to address the problem at hand resulting in higher levels of creativity. The extent to which individual members of a team are capable of generating creative ideas will determine the creativity performance of the team as a whole. Furthermore, creative individuals and experts in particular, are less likely to have difficulties or be uncomfortable expressing themselves, even under less than optimal conditions [23]. Thus, if teams have higher proportion of creative individuals who are experts, such teams are more likely to have a high degree of team creativity. People who could look at problems with a neutral objective were better able to generate suitable techniques and dynamic approaches. Another characteristic that enable individuals to be creative is the capability to suspend judgment and use a wide range of categories while coming up with creative ideas [10].

Cross-functional team working within organizations is often portrayed as the key to creativity and success of organizations. There is ample evidence from psychological research on teamworking of how diverse range of individuals can create, through synergy, ideas which go beyond what any single individual could have produced on their own [24]. Similarly, in 'Knowledge Management' perspective,

where there is an emphasis on knowledge creation and collaboration, interaction, and teamworking are seen to be crucial. For instance, the knowledge creation model developed by Newell et al. place significant emphasis on social process of dialogue and interaction [25]. In particular, dialogue and interaction occur over prolonged period so as to allow sharing of tacit knowledge which is essential for knowledge creation. The central idea is creativity develops from the *process*. The practice will add value to organization that has a culture of knowledge sharing where employees were driven to generate and share knowledge for the purpose of organizational improvement [26]. The employees are more motivated and willing to share their knowledge because they feel more valued for their intellectual capabilities and skills when they can see their contribution towards improvements in the organization.

Finally, individuals who remember large amounts of information more accurately also has the capability to be more creative than their counterparts [27]. Creativity is also influenced by an individual's knowledge in his or her own discipline [19]. Expertise and domain knowledge have been found to be important contributors to creativity. Complete novices tend to be less creative at first but, as they gain knowledge, their creativity increases rapidly. The study concludes that trust, willingness to share knowledge and friendly atmosphere helps an individual to be open to share knowledge and strengthen the team. Encouraging openness at work makes it more likely a greater number of employees will feel be able to make suggestions for improvement and challenge existing practice without fear of being snapped at, ridiculed, or punished in some way [28].

While no data appeared to challenge the TCM or hint at other constructs [22], further data collection from organizations in different sectors or from cross-organizational collaborations is required to more broadly examine the extent to which the constructs of TCM can manifest when applied to SMEs.

2.5. Strict Organizational Structure Can be an Inhibitor

A prior report suggested the relationship between climate for creativity and organizational structure [29]. Innovation is the successful implementation of creative ideas within an organization. Creativity, per se, would not lead to innovation. It must be coupled with conducive organizational climate to enable successful innovations. The zeal to understand the dynamics and complexities in managing innovation is partly attributed to rapid growth of market changes and increased diversity of consumers' behaviors and needs [30]. The research notes that creativity and open innovation have higher significance among small firms or SMEs since they constitute the largest number of business entities in any country's economy. SMEs are seedbed of innovation and various measures should be taken to further stimulate innovation activities among the SMEs [29]. In order to compete with larger firms, SMEs need to become more innovative. Creative employees who are placed in productivity-driven organizations with formal structures, time constraints, strict regulations, daily similar tasks, standardized workplaces, etc., may not be stimulated to show the desired creative behavior [31]. As such, these employees are less likely to come up with new ideas for product or process innovation. Therefore, flatter structures and simplified reporting procedures tend to give new ideas a better chance of getting off the ground as they are less likely to become bogged down in red tape of the committee-bound reporting structure [28]. Creativity is less common in an inward-looking organization than one that is more outward oriented and it is the latter which is better placed to capitalize on new opportunities. Conversely, providing challenging and trusting climate has the highest correlation with innovation and indicates sufficient leeway, trust and opportunities encourage novel solutions to challenging problems [29,32]. Fundamental creativity issues were dealt with but did not provide avenue of idea excitation. SMEs are the seedbed for innovation and have the potential to compete with bigger firms innovatively when well informed [33].

2.6. Conditions Surrounding SMEs in Brunei Darussalam

Brunei Darussalam is a Malay Islamic monarchy and an independent sovereign sultanate. The country is located on the north coast of the island of Borneo in the South East Asia. The 2015 census estimated the population to be about 417,000. Brunei's economy is supported largely by exports from

crude oil and liquefied gas. Oil and gas accounts for 48% of economic output [34]. With the aim of reducing dependency on oil and gas, the government developed a diversification plan that cuts across all the sectors of the economy. This action plan is known as Vision 2035—locally known as "Wawasan 2035" in Malay—defines what the government wants the landscape of the country in the near future and helps it prepare society's mindset to meet challenges [35]. The vision encapsulates a nation which will be recognized for the accomplishment of her educated and highly skilled people measured by the highest international standard; maintaining quality of life that is among the top 10 nation in the world and a dynamic and sustainable economy. At the heart of the plan is development of Brunei's SMEs which contributes 58% of employment and 22% of GDP [34]. Table 1 shows the SME distribution.

Table 1. Percentage establishment of different SMEs in Brunei Darussalam.

Type of Enterprise	Number of Employees	Proportion of Establishment (%)
Micro	1–5	52
Small	6–50	44
Medium	51–100	2
Large	More than 100	2

A total of 9302 registered business establishment in all sectors were reported in 2008, Figure 1 [34]. Out of these, 98.37% were active SMEs most of which are in the wholesaling and trading sector followed by those in the construction sector, mining, quarrying and manufacturing sector; community, social and personal services; and agriculture, forestry, and fishing, respectively [34]. One of primary focus of the Wawasan 2035 is to incorporate SMEs into regional and international markets [34,35].
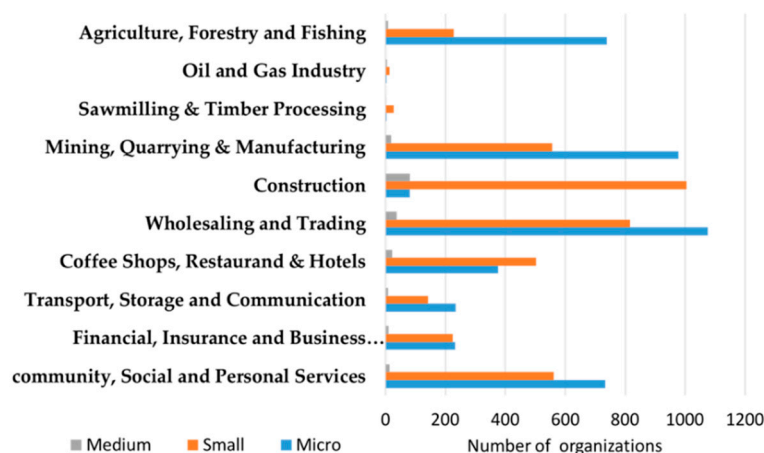

Figure 1. Distribution of SMEs across sectors in Brunei Darussalam.

3. Research Methodology

The aim of this study is to determine whether the experiences and perspectives of employees in SME and students in HEI are similar. To do so, factors affecting individual and team creativity generation among employees of SMEs and students in Higher Education Institutions (HEI) in Brunei Darussalam were investigated. Prior research work discussed in the Key Literature Review section clearly identified importance of learning creativity among students and employees in organizations. Furthermore, while recognizing the inherent creativity of individuals, creative processes are enhanced by interactions in teams. At the same time, there is an overwhelming number of SMEs in Brunei Darussalam.

In light of key findings in the literature, data collection is focused on four key areas affecting students in HEI and employees of SME, namely:

- Understanding and practice of creative tools and techniques;
- Creativity performance in teams and as an individual; and

- Perception relating to creativity.

3.1. Data Collection

Data were collected through interviews and questionnaires from SME employees involved in the product design and development process and HEI students. Table 2 lists the job functions and level of study of HEI students.

Table 2. Job functions of SME employees ($n = 39$) and study program of HEI students ($n = 68$).

Job Function	Percentage of Respondents (%)
Sales/Marketing	23
Education/Training	15
Other	21
Administration/Service	10
Engineering/IT	31
Study Program	**Percentage of Respondents (%)**
Diploma	3
Bachelor	63
Masters	25
Doctorate	9

Questions were designed to gather information on the four key areas in Section 3. A total of 39 completed responses ($n = 39$) were obtained from employees of 10 micro, five small, and five large SME. Similarly, 68 completed responses ($n = 68$) were received from students enrolled in three universities and one technical institution. Students from HEIs were in their final year of study. This was done with the assumption that they have carried out at least one project during the course of their studies and so would be able to identify with the questions adequately.

Visits to SMEs were conducted to gather in-depth on state of creativity in these organizations. During these visits, interviews were conducted with employees of SMEs directly involved in product design and development. Identical questions were used, as much as possible, when interviewing all participating SMEs to ensure consistency. Interview questions were designed to gather information on overall picture of the company and interviewees responsibilities with respect to creativity, understanding of the applications of creativity and innovation in the company. More specific questions were designed to obtain information on creative tools and techniques available in the organization and how these tools are used to empower creative teams or specialists.

3.2. Data Analysis

Interviews and questionnaires conducted among employees of SME and student of HEI generated nominal data. Pearson's chi-square $\left(\chi^2\right)$ test is used to determine goodness of fit between data sets from these two groups [36]. Pearson's chi-square test is selected as it is not only able to determine significance between nominal data sets but it can also provide information on which categories account for differences. This advantage allows for a richer analysis of data collected. In this study, the test was implemented on Microsoft-Excel software. The Pearson Chi-square test calculates χ^2 statistic through Equation (1):

$$\chi^2 = \sum_{i=1}^{N}\left(\frac{O_i - E_i}{E_i}\right)^2 \tag{1}$$

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where:

χ^2 = Pearson's chi-square statistics
O_j = Number of observations of type *i*
E_i = Expected value of type *i*
N = Total number of observations

For any *i*-type and *j*-atttibute combinations, the expected value E_{ij} is defined by Equation (2):

$$E_{ij} = N p_i p_j \tag{2}$$

where:

p_i = Fraction of all observations of type *i*
p_j = Fraction of all observations with attribute *j*

The sample sizes for employees of SME and students of HEI are 39 and 68, respectively. To determine if there is any difference between data sets of employees and students due to effects other than sample size, one of the data sets has to be linearly scaled to the sample size of the other. Scaling was done by multiplying $\frac{39}{68}$ to values in the dataset from students to map to the sample size for SME employees. Pearson's chi-square test was implemented on transformed datasets from students. In this study, the *p*-value approach is used at a significance level of 0.05 adopted as a criterion. Since *p*-values for the chi-square statistic decrease with uniform sample size, the transformation essentially increases the likelihood of type I error.

The statistical strength of Pearson's chi-square analyses was assessed using Cramer's V test through Equation (3) [37]:

$$\Upsilon = \sqrt{\frac{\chi^2}{N(\kappa - 1)}} \tag{3}$$

where:

Υ = Cramer's V test statistics
κ = Number of rows or number of columns in the contingency table, whichever is less

4. Results

Employees in various SME organizations agree creativity is important to the success of their business and productivity. There was general agreement that to meet customer needs effectively, innovative strategy was needed. It was also agreed that it is essential staff understand and apply creative tools and techniques to solve emerging design development challenges. In addition, it is identified that the product development stage forms the basic stage of effectively satisfying the customer needs and companies experience the greatest challenge at this stage: namely, identifying the method of inquiry that help to gain clarity of what the customer needs, understanding technical thinking tools and design approach that lead to proper design mock up that will satisfy the needs. The two most common scenarios reported by SMEs were (i) the going back and forth when clients could not convey their design requirements and (ii) product specifications diverging from budgets; two factors which can be connected.

Our research shows these were the most frequently cited factors impeding creative processes during product development. Even though cost and time were factors, clarity of purpose ranked as the leading factor. A few companies have structures that help to resolve the challenge to a reasonable degree, while majority still struggle with it partly due to lack of experiences or lack of benchmark references. These factors are listed in Table 3. Each SME organization aspires to develop an innovative edge, and to possess and use techniques and tools of creativity. The interviews indicate interests by

each SME to strengthen their capabilities on creativity and to apply creative tools and techniques among their staff more extensively.

Table 3. Factors that discourage creativity in teams.

Item
• Customer communicates needs or requirement ambiguously
• Costs conflict with budget
• Customer demands frequent changes on a design
• Customer could not make up their mind
• Deadline is tight and customer is not willing allow more time
• Cash inflow is limited

4.1. Understanding and Practice of Creative Tools and Techniques

Two questions in the survey attempt to shed light on the above aspect. Responses to the question are summarized below. Bar graphs compare types of responses and present the raw data and those expressed as a percentage of the group.

Qn A: Have you participated or received instruction on creative design and management?

Figure 2 indicates a majority of employees of SME and students of HEI have not participated or received creative design and management. Results indicate 59% and 66% of Employee in SME and students in HEI, respectively, answered 'NO' to the question. In contrast, only 23% of employees in SME and 18% of students in HEI received some form of instruction. This suggests instructions in creative design and management are offered by HEI and SME for their students and employees, respectively, even though a majority of them have not received any instruction.

Qn B: Are you interested to receive additional instruction in creativity?
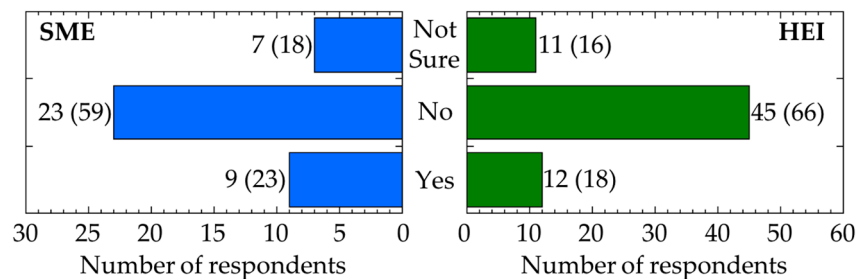

Figure 2. Responses to a question asking whether participants have participated or received instruction on creative design and management. The numbers in parenthesis are percentages.

Figure 3 shows about a third of employees in SME organizations are interested to receive additional instruction and almost half of them are "Not sure". In contrast, 59% of HEI students replied they are interested, while about a third are "Not sure". The percentage of employees of SME not interested is more than twice that for students in HEIs. These observations suggest that additional instructions will receive a better response in HEIs than in SMEs. This could reflect organizational constraints in SME which is not present in HEIs.
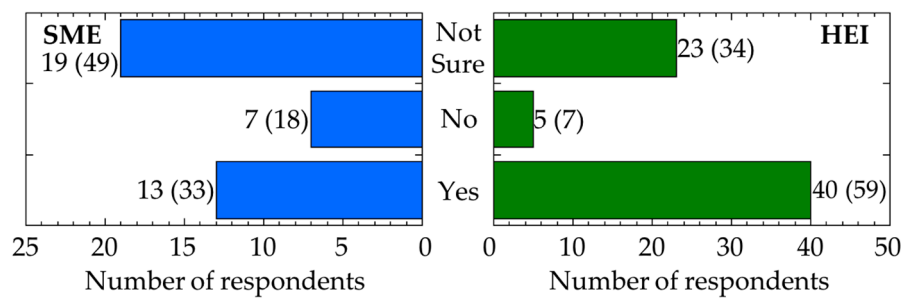
Figure 3. Responses to a question asking whether participants are interested to received additional instruction in creativity. The numbers in parenthesis are percentages.

4.2. Creativity Performance in Teams and as an Individual

One question in the survey focusses on the above aspect:

Qn C: Does group work result in superior creative performance relative to individual work?

Responses to the question are summarized in Figure 4. An overwhelming majority in both employees of SME and students of HEI groups agree that group work resulted in superior creative output. In contrast, about a quarter of respondents indicated individual work resulted in superior creative performance. This observation reinforces contributions of teamwork dynamics on creativity output. In addition, curriculum in HEI can be tailored towards team-based learning especially in subjects with significant creative content.
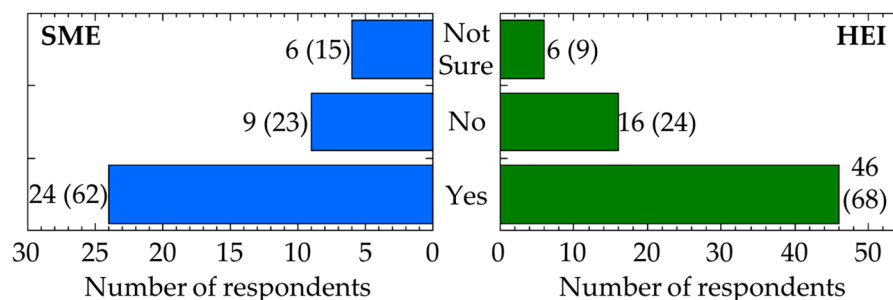

Figure 4. Responses to a question asking whether group work results in greater creative performance. The numbers in parenthesis are percentages.

4.3. Perception Relating to Creativity

Two questions in the survey attempt to gather information on the above topic:

Qn D: Does competition lead to greater use of creative tools and approaches?

Figure 5 indicates a majority of employees of SMEs and students of HEIs agree that competition will spur adoption of creativity tools and approaches. An overwhelming majority of employees in SMEs (54%) and students in HEIs (78%) agree that competition facilitates creativity among individual and teams within the organizations. Notably, the greater percentage (78%) of Students in HEIs compared to employees in SMEs (54%) that subscribe to this sentiment underline a higher degree of openness to competition among the former group and, perhaps, reflect lack of competition or regulations that hinder competitive forces in Brunei's industry.
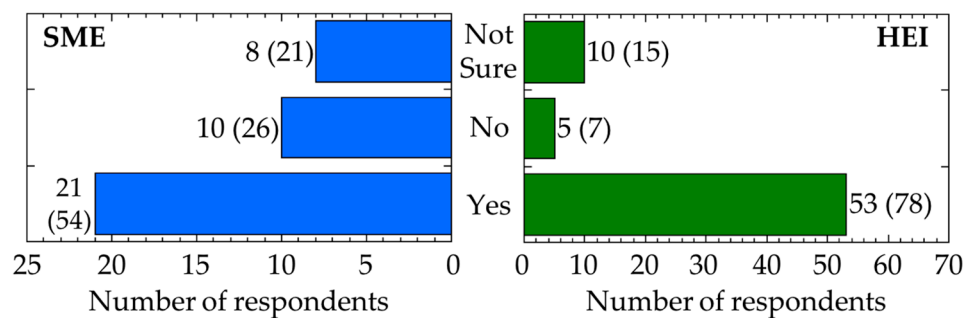
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Figure 5. Responses to a question asking whether competition leads to greater adoption of creativity. The numbers in parenthesis are percentages.

Survey results indicate open mindedness is widely perceived to be associated with creativity as shown in Figure 6. 'Unconventionality' was the least associated with creativity among employees in SME with 10% while among students in HEIs, 'Novelty' was the attribute least associated with 7%. However, a majority in both groups selected 'Open-mindedness' as the attribute associated with creativity. Among employees in SMEs and students in HEIs, 36% and 40%, respectively, selected open-mindedness.

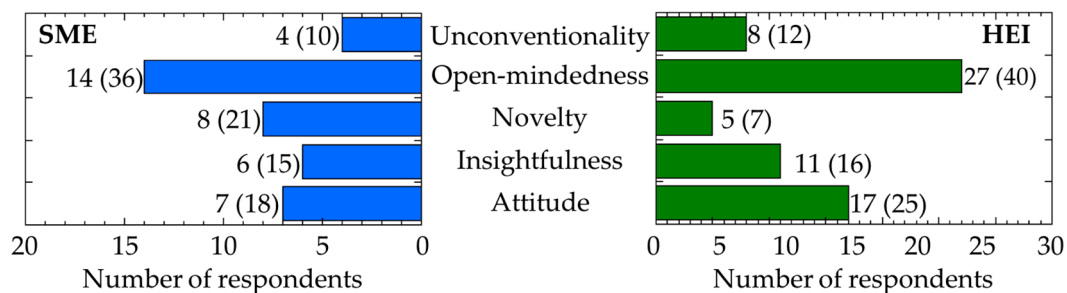*Qn E: Which attribute do you most associate with creativity?*

Figure 6. Responses to questions asking attribute most associated with creativity. The numbers in parenthesis are percentages.

5. Statistical Analysis and Discussion

Statistical analysis was performed on results presented in Section 4. Results of the Pearson chi-square $\left(\chi^2\right)$ test and Cramer's V test for statistical strength are presented in Table 4. The degree of freedom (Df) is defined as the number of choices of a variable less 1. For Qns A–D, there are three choices namely "Yes", "No" and "Not sure"; hence Df is 2 for these questions. The null (H_1) and alternative (H_2) hypotheses are:

H₁: *Responses from employees in SME are the same as those of students in HEI.*

H₂: *Responses from employees in SME are different as those of students in HEI.*

Pearson's chi-square $\left(\chi^2\right)$ test is used to determine similarity between responses of employees in SMEs and students in HEIs. Null hypotheses are nullified if $p-value \leq 0.05$. The p-values for Questions A and C are greater than 0.05 hence the null hypotheses are not nullifiable and H_1 is supported, as shown in Table 4. Similarly, for Questions B, D, and E, with $p-values \leq 0.05$, H_1 are nullifiable and H_2 is supported. Cramer's V statistics for all questions are less than 0.3 which suggests weak correlation between responses of groups.

Table 4. Statistics of Pearson's chi-squared test and Cramer's V test.

Question	Df	χ^2	*p*-Value	Supported Hypothesis	Υ
A: Have you participated or received instruction on creative design and management?	2	0.480	0.597	H_1	0.078
B: Are you interested to receive additional instruction in creativity?	2	5.528	0.002	H_2	0.266
C: Does group work result in superior creative performance relative to individual work?	2	0.808	0.346	H_1	0.102
D: Does competition lead to greater use of creative tools and approaches?	2	6.045	2.1×10^{-5}	H_2	0.278
E: Which attribute do you most associate with creativity?	4	2.998	0.037	H_2	0.196

From Pearson's chi-square analysis of response to Question A, it can be inferred that employees of SMEs and students in HEIs have similar experience in that a majority of them have not received instruction in creativity. Indeed, much more staff and students of SMEs and HEIs, respectively, do not receive instruction on creativity compared to those who do. To remedy this situation, SMEs and HEIs and can offer instruction in creativity to a wider group of employees and students in their organization. However, students and employees will respond to additional instructions in different ways as revealed by statistical analysis and responses to Question B. It indicates if additional instructions in creativity are offered, greater acceptance will be received among students of HEIs than among employees of SMEs.

Statistical analysis of Questions A and B point to the need for human resource and skill development statutory bodies such as the Darussalam Enterprise (DARE) and for educational entities in Brunei Darussalam to review their programs and curricula to ensure instructions on creativity are sufficient. A greater impact can be expected if creativity is taught at HEI as students are more interested in attending such courses. Indeed, a university that implemented creativity courses reported a total of 260 students had taken such course within four semesters [18]. Re-invention among SMEs through initiatives to enlighten businesses on the use and application of creative design in product development is also suggested. However, since results of Question B indicate a lack of interest among employees of SMEs to attend creativity courses, regulations or incentives may be needed to compel or attract such employees to attend such courses such as through a skill-upgrading programs. As discussed in Section 2.3, even individuals who have little prior knowledge of creative techniques can be motivated to develop novel initiatives after attending introductory creative courses [18]. This dovetails with prior research that concludes creativity is a trait that can be learned and acquired [1,23]. The root cause for lack of interest among SMEs deserves further study. It is possible that a strict organizational culture, influenced by a structured societal framework, inhibits an open environment where employees can request to attend courses as indicated by prior works discussed in Section 2.5 [28,29].

Employees of SMEs and students in HEIs agree that group work results in higher creative output, as shown by analysis of Question C. Additionally, the Cramer's V statistics Υ = 0.266 is among the highest although still weak for a correlation parameter. This is important especially for HEIs which should design learning activities using greater team-based approaches especially in modules with significant creativity content. As discussed in Section 2.4, the central idea is creativity develops from the *process*. For group work, the process is facilitated through close interactions, i.e., interactions with other group members. However, individuals have to interact with his or her environment which may be prolonged and so are hindered. Hence, analysis of results of Question C reinforces findings in the literature [10,23–25]. This outcome is also significant as it indicates that the practice and learning of creativity is enhanced by team dynamics. Hence, HEIs should design curriculum such that team-based approaches are used in activities, especially those with creative content.

A majority of employees of SMEs and students in HEIs agree that competition will spur greater adoption of creative tools and approaches, as shown by responses to Question D shown in Figure 5. However, Pearson's chi-square $\left(\chi^2\right)$ test show statistical difference between responses of these two

groups with a *p*-value of 2.1×10^{-5} as shown in Table 4. An analysis of the data show that the greatest contribution to the χ^2-value is the large difference in the proportion of those who chose "No"; 26% of SME employees and only 7% among HEI students. However, the Cramer's V statistics $\Upsilon = 0.278$ is the largest among all the questions on account of a majority in both groups choosing "Yes"; 54% of SME employees and only 78% among HEI students. Competition can be expected to stimulate improvisation necessary for innovation. It has been argued competition can have a dome-shape effect on creativity, which means it has the capacity to enact self-reliance necessary to emancipate originality and cutting-edge innovation both in industries and training institutions, but the trend of competition may also get to the extent where people will be afraid to invest both talent and capital, stifling creativity [38]. Competition among co-workers has been observed to diminish creativity while healthy competition between groups tends to maximize potential of groups. An economy largely dominated by cultural tastes may not respond well to competition and further study exploring effect of culture on competition in Brunei is recommended.

Open-mindedness received the highest number of votes among employees of SMEs (36%) and students in HEIs (40%) as the attribute most associated with creativity as shown in Figure 6. However, among the other four attributes, namely "Attitude", "Insightfulnes", "Novelty", and "Unconventionality", there were differences between responses of employees and students which resulted in large χ^2 value and a low *p*-value of 0.037, which is below the significance level. This result is significant as prior key literature findings show that ability to suspend judgment on ideas of others is an important trait of high performance teams [10]; as discussed in Section 2.4. The conceptual foundations of open mindedness were developed by Hare [39]. Open mindedness is defined as being genuinely concerned to avoid bias, wishful thinking, and other factors that tend or will compromise serious examination of evidence [40]; it also means "being ready to view one's conclusions, no matter how strongly supported, as completely revisable in light of further evidence given the fallible nature of knowledge claims" [41]. These contrast to making up one's mind in advance and that contrary views must be mistaken and, therefore, unacceptable. Open mindedness is a measure of tolerance, non-judgmental, and unbiased views. Workers can creatively perform significantly better if they understand that their views or ideas can be revised. This is especially so in light of changing or ambiguous client requirements or budget considerations which are often cited as factors that discourage a creative team as listed in Table 3. This will give creative teams or individuals confidence needed to delve in and formulate extraordinary concepts during product development cycle. Open minded teams or individuals will seek and tap from unlimited alternatives. However, knowing alternatives depends on exposure to prior instructions in creative design and management. Hence, lack of instructions in HEIs and SMEs will discourage creative thinking. Hence, diversification programs integral to Wawasan 2035 can be better implemented in an open-minded society.

Assessing creativity is a highly intricate challenge that is virtually impossible to be accomplished using a handful of parameters, especially when attempted at the national level. An economy largely dominated by cultural tastes may not respond well to competition and further study exploring effect of culture on competition in Brunei is recommended [42,43]. In this context, Brunei offers a unique opportunity to study effect and interplay between culture, competition and creative processes in SMEs due to the large number of SMEs in the country. Additionally, Brunei's culture combines Malay and Islamic tenets with strong emphasis on social order and has a culturally centralized society similar to those of other communities in East Asia, such as Chinese and Japanese societies. Culturally de-centralized countries have been reported to be more innovative than culturally centralized countries [44].

6. Conclusions

This research assessed creative processes among employees in small and medium enterprises (SME) and students of higher education institutions (HEI) in Brunei Darussalam through interviews with key personnel and surveys. Ambiguity of customer needs or requirement was a factor most often cited to

impede creativity in teams in SME organizations. Statistical analysis of responses from 39 students from HEIs and 68 employees of SMEs was carried out using Pearson's chi-square test for goodness of fit and Cramer's V test for strength test. Such analysis reveals that a majority of respondents in both groups have not received any instruction in creativity. In addition, more students are interested in receiving instruction in creativity than do employees. A majority (>60%) of respondents in both groups agree that group work results in higher creative performance. Similarly, a majority (>50%) of respondents in both groups agree competition will lead to greater adoption of creative tools and approaches. However, a significantly larger percentage (26%) of employees disagree relative to the students (7%). Additionally, there is a consensus among students and employees that open-mindedness is most associated with creativity although there is significant difference between the number of respondents for other attributes among employees and students. The findings were discussed the light of policy and operational level recommendations for SMEs and HEIs in Brunei Darussalam.

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