

# A COMPARISON OF MBA BUSINESS STUDENTS' ACADEMIC PERFORMANCE BETWEEN THREE MODES OF DELIVERY

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## Abstract

This eight-year longitudinal study evaluates the academic performance of Executive MBA students across three academic delivery modes. The study includes 12 of the 14 modules in the curriculum at an AMBA-accredited business school in South Africa. The modules Technology Management and Organisational Behavior could not be used due to incomplete data because they were discontinued. The modes of delivery are 1) full-contact (2017-2019), 2) full-online during Covid-19's hard lockdown (2020-2021), and 3) hybrid (2022-2023). The study aims to determine if the delivery mode significantly influences students' academic performance. The One-way Analysis of Variance (ANOVA) showed significant differences exist for 11 of the 12 modules across the delivery modes. However, fewer practically significant differences were identified when Cohen's effect size was used as a refined measurement to determine which delivery modes differ between specific modules. However, comparing the academic performance between the delivery modes, it is evident that the hybrid mode fared significantly better and outperformed full-online and full-contact classes. The analysis showed that students fare equally well in the so-called hard management skills as in the "soft skills". Likewise, there are no significant differences in the marks of research and the integrative modules. This shows that study leading can effectively be done in any of the three modes of delivery. The results show that modern students (post 2022) are better adapted towards hybrid learning than historic students (2017-2019) were to full-contact tuition models. This study, therefore, provides evidence that modern mature students (such as Executive MBA students) as well-suited to study towards an MBA in a hybrid learning model. The study concludes that the hybrid mode of delivery should be retained and refined as a viable tuition model for business schools to use.

## Keywords

Delivery mode, Executive MBA, academic, performance, COVID-19

## JEL Classification

I21 Analysis of Education

M16 International Business Administration

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## Introduction

The North-West University is a leading public university in South Africa. Its business school was founded in 1971 [1] and has a consistent Top 10 ranking (regularly rated as a Top 5 business school) in the country [2]. The school offers the Post-graduate Diploma in Management, the Executive Master's in Business Administration (MBA), and a Doctorate in Philosophy and participates actively in executive education [3]. The South African MBA market favors an Executive MBA; only one competitor school offers a full-time one. This means that all MBA students are full-time employed and have at least three years of relevant work experience. All degrees and diplomas must be registered and accredited by the Council of Higher Education (CHE) within the Department of Higher Education and Training (DHET). This registration includes, among other details, the curriculum, level descriptors, acceptance criteria, and mode of delivery.

NWU Business School's Executive MBA is structured over two years and comprises 14 modules. Two modules are presented in the final year (The Capstone Company Project and the Research Dissertation). The rest are semester modules [3]. The mode of delivery comprises full-contact classes on Saturdays with block-release study schools (one week per semester) [5].

In early 2020, the COVID-19 pandemic transformed higher education significantly. Abruptly, full-contact classes had to be redesigned and presented online because the South African Government followed the global trend to initiate a Level 5 hard lockdown on 27 March 2020 [6]. This meant that lecturers and students had to adapt to a study and work environment within a week and find suitable technology to facilitate classes online [5]. Likewise, the NWU Business School also rapidly transitioned from full-contact (person-to-person) classes to full-online learning (Bisschoff, 2024; [5][7]. Lecturers and students had to adapt quickly to deliver and continue modules remotely using various online platforms, video conferencing tools, and learning management systems (Lotriet, 2020). After some restrictions were lifted on 21 September 2020 [6], the business school could explore alternative tuition models and modes to deliver academic content [7]. However, returning to before the hard lockdown (full-contact classes) was not feasible because some restrictions on movement and gatherings remained intact [8]. The business school has also invested heavily in technology, training to develop online-educated lecturers and students, and to reap the benefits and developments of online learning, which has now formed a "new normal" at the NWU Business School. On the other hand, students have grown accustomed to online education, but there is still a strong demand for synchronous contact with lecturers, facilitating business problematics and personal transfer skills.

This, in essence, postulates the problem statement faced by the NWU Business School. Which teaching method, or rather, which mode of delivery, is the most relevant and effective? Should the MBA lectures return to a full-contact delivery mode, stick with the newly established full-online mode, or attempt to integrate the benefits into a hybrid mode of delivering education to a new breed of students? What is the best way forward to facilitate Executive MBA education?

This study analyses the academic performance of Executive MBA students at the NWU Business School in South Africa for all the modules in the MBA curriculum in each of the different delivery modes. It examines academic performance from 2017 to 2024.

## Research questions and study objective

Two research questions address the problem stated above:

- RQ1: Are there significant differences in students' academic performance between full-online, Full-contact and Hybrid modes of delivery on the MBA level?
- RQ2: Is there a preferred mode of delivery to optimise Executive MBA students' academic performance?

This study's objective is to determine if the delivery mode (full-contact, full-online or hybrid) significantly influences Executive MBA students' academic performance.

## Hypotheses

The hypotheses for this study are:

H<sub>0</sub>: Academic performance: Contact = Online = Hybrid

H<sub>a</sub>: Academic performance: Contact ≠ Online) ≠ Hybrid

## Theoretical foundation

### Research philosophy

Social constructivism serves as the educational basis for MBA module evaluation. According to social constructivists, individuals actively create and interpret knowledge through their interactions with others, such as active and experiential learning, and their engagement with cultural norms, values, and symbols of marketing management [9].

Typical advantages of social constructivism are collaborative learning, where individuals can engage in dialogue, share ideas, and learn from each other. This is specifically relevant to the MBA teaching environment because of the importance of group work, discussions, and cooperative activities to facilitate knowledge construction through social interaction [10]. The MBA also requires authentic tasks and contexts to enable learning from real-life situations (such as group case studies). In a social constructivist approach, lecturers are learning facilitators, not sole knowledge transmitters. This is relevant to an MBA because lecturers facilitate and guide students to discover real-world solutions by creating a supportive learning environment and encouraging active student participation and reflection. Likewise, students are encouraged to explore different viewpoints on business solutions [11]. Discussions on case study solutions are invaluable because they promote critical thinking, reflection, and considering alternative interpretations, fostering a deeper understanding of complex issues [10]. These are all qualities required by astute business leaders.

Integrating social constructivism and open educational resources (OER) benefits teaching and learning in MBA classes. MBA modules require students to read widely and consult resources such as case studies, industry reports, and related business material to stimulate critical thinking, prompt discussions, and engage students in applying their knowledge to real-world business scenarios [11]. In this case, OER provides MBA students with diverse perspectives and a global outlook because industry leaders and experts offer various viewpoints on business practices from different industries and countries. This exposure broadens students' understanding of business complexities and enhances their decision-making skills [12]. The MBA program at the NWU Business School specifically aims to develop students' skills beyond the classroom and foster lifelong learning by incorporating OER to stay current in an ever-changing business environment.

## Methodology details

### The Executive MBA database

The database comprises panel data of Executive MBA students' marks from 2017 to 2024 at an AMBA-accredited and leading South African business school. It contains participation marks, examination marks, and final module marks for each module in the Executive MBA curriculum. Some modules use traditional sit-down, open-book written exams comprising business problematics and case studies, while others use a Portfolio of Evidence. The delivery mode was the dependent variable, while the independent variables (final module marks) were stratified per module.

Students attended MBA classes on Saturdays between 07:30 and 14:30. Each module has eight Saturday classes of 2.5 hours per module and shares in a 60-hour one-week study school per semester (January and July) [3][5]. Additionally, each module has eight hours of synchronous contact time:

- Full-contact (2017-2019): Contact classes (20 hours) and contact study schools (8 hours)
- Full-online (2020-2021): Online classes (20 hours) and online study schools (8 hours)
- Hybrid (2022-2024): Online classes (20 hours) and contact study schools (8 hours)

All MBA modules and examination marks are moderated annually by local or international moderators [3].

### Data collection

This study used panel data comprising all the MBA students' marks of all the modules completed between 2017 and 2024 [13][14][15][16][17][18][19][20]. This includes 2,193 data entries across the 12 modules, and spans three delivery modes (Full-contact pre-COVID-19; Full-online during the hard COVID-19 lockdown; and Hybrid comprising Full-Contact and Full-Online classes). The analysis encompassed all the module marks in the MBA curriculum of students who registered at the North-West University's Business School. The data includes failing and passing marks of modules. For example, both marks were analyzed if a student failed a module and then passed in a second attempt (a student can repeat a module only once as per the A-rules of the business school) [3]. Likewise, the marks of students dropping out were also retained. In practice, this also implied that if a student completed, for example, 10 of the 14 modules before dropping out, those marks of the completed modules formed part of the analysis. This means the data were not manipulated or adjusted to only analyze successful students; all students' academic performance was scrutinized. However, in cases where a registered student was inactive, the resultant zero mark was omitted from the analysis. Only 12 of the 14 modules in the MBA curriculum could be analyzed because of incomplete data. The two modules, namely Technology Management and Organisational Behavior, were discarded when the MBA curriculum was modernised.

### Suitability of data for analysis

Skewedness and kurtosis analyses determined the data's suitability as measured against the normal distribution curve (see Table 1) [21][22].

**Table 1: Normality of the data**

Module Code	Mean	Std. Deviation	Skewness	Kurtosis
Company Project	68,07	7,923	-0,566	-0,415

Corporate Governance	63,25	8,262	-0,244	0,610
Dissertation	68,34	7,194	-0,080	-0,207
Economics	66,13	9,670	-0,656	0,401
Entrepreneurship	62,65	8,392	-0,165	-0,217
Financial Management	61,82	10,076	-0,142	0,200
Leadership	68,81	10,702	-0,378	-0,329
Managerial Accounting	68,68	13,144	-0,118	-0,665
Marketing	68,25	9,251	-0,517	0,503
Operations	70,01	7,068	-1,629*	5,960*
Research Methodology	63,90	8,400	-0,226	0,114
Strategy	64,80	9,141	0,039	-0,533
Total	66,40	9,777	-0,289	0,156

\*Outside normal parameters

Table 1 shows that only the marks for the Operations Management module have excessive negative skewness (-1.629), exceeding the conservative margins between -1 and 1 [22]. This implies that most students performed relatively well in this module, and only a few performed below average. Likewise, Operations Management has a high kurtosis of 5,960. This shows that its distribution curve peaks very high [21][23]. The other modules' kurtosis values fall within acceptable margins (between -1 and 1) [23]. Despite being negatively skewed and having a high positive kurtosis value, the marks of Operations Management are included in the analysis to provide a more detailed picture of MBA academic performance. As a result, Operations Management's results should be interpreted with this data-distribution limitation in mind.

Cronbach's coefficient alpha determined the reliability and internal stability of the module marks. The data has excellent reliability ( $\alpha=0,979$ ; decision rule:  $\alpha \geq 0,70$ ) [22][23]. Therefore, the data is reliable and suitable for further analyses [23].

## Statistical analysis

The analyses were conducted in three steps [24]. 1) Descriptive statistics calculated the mean, minimum, maximum and standard deviation values for each module per year and for the three delivery modes. 2) A One-way Analysis of Variance (ANOVA) was used to determine if significant statistical differences exist between the three delivery modes ( $p \leq 0,05$ ;  $p \leq 0,10$ ). These statistical differences were confirmed using the Robust Test of Equality of Means (Welch) test [25]. 3) Cohen's effect size was used to determine the significant practical differences for each module regarding the delivery mode. (Decision rule: Insignificant effect =  $d < 0,3$ ; Small effect =  $0,3 \leq d < 0,5$ ; Medium effect =  $0,5 \leq d < 0,8$ ; and Large effect =  $d \geq 0,8$  [22][26].

## Results

The results are discussed stepwise as explained above.

### Descriptive results

Table 2 shows the descriptive results comprising minimum, maximum, mean and standard deviation values. It also shows the number of cases analyzed per module and mode of delivery.

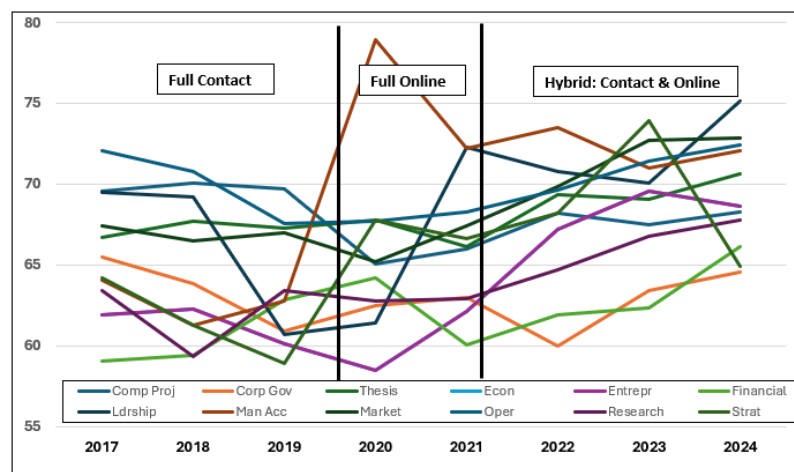
**Table 2: Module marks per mode of delivery**

	Grouped per mode of delivery		N	Min	Max	Mean	Std. Dev.
Company Project	PreCovid(Contact)	ModuleFinalMark	259	50	81	69,80	7,626
		Valid N (listwise)	259				
	Covid(Online)	ModuleFinalMark	162	50	79	65,39	8,908
		Valid N (listwise)	162				
	PostCovid(Hybrid)	ModuleFinalMark	276	50	78	68,03	7,129
		Valid N (listwise)	276				
Corporate Governance	PreCovid(Contact)	ModuleFinalMark	200	40	80	63,58	7,884
		Valid N (listwise)	200				
	Covid(Online)	ModuleFinalMark	39	31	80	62,51	11,512
		Valid N (listwise)	39				
	PostCovid(Hybrid)	ModuleFinalMark	169	50	85	63,04	7,839
		Valid N (listwise)	169				
Dissertation	PreCovid(Contact)	ModuleFinalMark	216	50	82	67,31	7,082
		Valid N (listwise)	216				
	Covid(Online)	ModuleFinalMark	150	50	86	67,05	7,128
		Valid N (listwise)	150				
	PostCovid(Hybrid)	ModuleFinalMark	293	52	91	69,76	7,078
		Valid N (listwise)	293				
Economics	PreCovid(Contact)	ModuleFinalMark	610	31	87	65,19	9,483
		Valid N (listwise)	610				
	Covid(Online)	ModuleFinalMark	277	43	85	71,20	7,487
		Valid N (listwise)	277				
	PostCovid(Hybrid)	ModuleFinalMark	545	21	85	64,51	10,185
		Valid N (listwise)	545				
Entrepreneurship	PreCovid(Contact)	ModuleFinalMark	359	37	81	61,38	7,704
		Valid N (listwise)	359				
	Covid(Online)	ModuleFinalMark	174	3	80	60,01	11,071
		Valid N (listwise)	174				
	PostCovid(Hybrid)	ModuleFinalMark	128	50	85	68,56	6,672
		Valid N (listwise)	128				
Financial Manage	PreCovid(Contact)	ModuleFinalMark	410	31	85	60,29	10,216
		Valid N (listwise)	410				

	Covid(Online)	ModuleFinalMark	167	33	90	62,44	11,027
		Valid N (listwise)	167				
	PostCovid(Hybrid)	ModuleFinalMark	290	36	86	63,64	8,932
		Valid N (listwise)	290				
Leadership	PreCovid(Contact)	ModuleFinalMark	355	36	93	66,19	10,931
		Valid N (listwise)	355				
	Covid(Online)	ModuleFinalMark	253	15	92	68,06	11,370
		Valid N (listwise)	253				
	PostCovid(Hybrid)	ModuleFinalMark	329	50	95	72,05	9,416
		Valid N (listwise)	329				
Managerial Accounting	PreCovid(Contact)	ModuleFinalMark	415	25	95	62,73	11,919
		Valid N (listwise)	415				
	Covid(Online)	ModuleFinalMark	179	11	99	76,18	14,083
		Valid N (listwise)	179				
	PostCovid(Hybrid)	ModuleFinalMark	311	50	94	72,12	10,893
		Valid N (listwise)	311				
Marketing	PreCovid(Contact)	ModuleFinalMark	566	37	87	66,97	8,717
		Valid N (listwise)	566				
	Covid(Online)	ModuleFinalMark	205	16	85	65,92	11,391
		Valid N (listwise)	205				
	PostCovid(Hybrid)	ModuleFinalMark	254	18	91	72,20	9,245
		Valid N (listwise)	254				
Operations	PreCovid(Contact)	ModuleFinalMark	410	26	84	70,41	7,079
		Valid N (listwise)	410				
	Covid(Online)	ModuleFinalMark	163	18	83	68,02	9,195
		Valid N (listwise)	163				
	PostCovid(Hybrid)	ModuleFinalMark	210	50	80	70,52	5,690
		Valid N (listwise)	210				
Research Methodology	PreCovid(Contact)	ModuleFinalMark	381	37	86	61,92	8,567
		Valid N (listwise)	381				
	Covid(Online)	ModuleFinalMark	153	9	81	62,84	11,889
		Valid N (listwise)	153				
	PostCovid(Hybrid)	ModuleFinalMark	294	50	82	66,47	6,828

		Valid N (listwise)	294				
Strategy	PreCovid(Contact)	ModuleFinalMark	394	33	86	61,04	8,263
		Valid N (listwise)	394				
	Covid(Online)	ModuleFinalMark	140	50	82	67,32	7,961
		Valid N (listwise)	140				
	PostCovid(Hybrid)	ModuleFinalMark	276	50	88	68,89	8,711
		Valid N (listwise)	276				

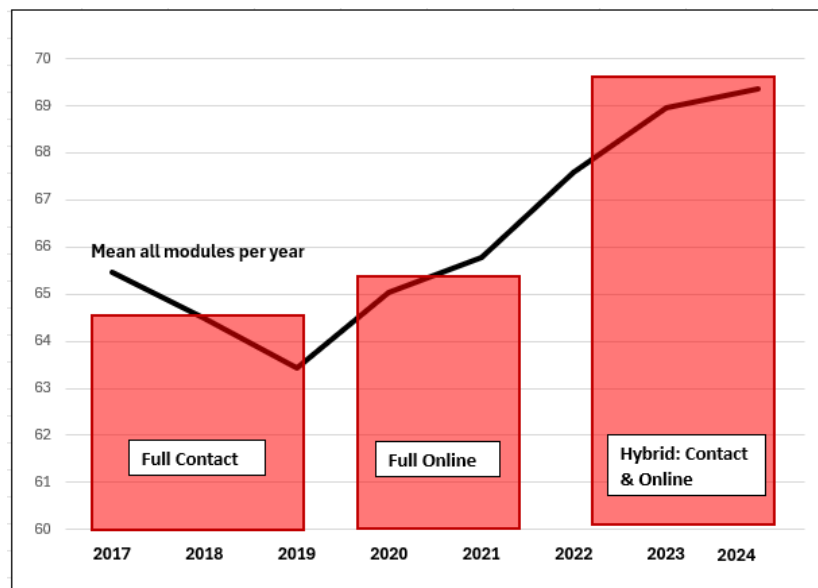
Table 2 shows satisfactory academic performance across all the MBA modules, with average marks ranging between 65% and just above 70% per module. However, when scrutinizing the academic performance in each delivery mode (see Figure 1), there is some evidence of lower academic performance when full-contact students abruptly switched to the full-online delivery mode after the hard lockdown. This decline in performance is specifically relevant to 2020, when the hard lockdown was initiated during the semester. In practice, students had just completed their 3<sup>rd</sup> contact class when the lockdown was enforced. Students and lecturers had to switch to online teaching in one week. Neither the students nor the lecturers were prepared for this change. As such, the negative influence on the marks (especially in the first semester) is evident. Students' academic performance in Managerial Accounting improved significantly from 63% to 76%. However, scrutiny of this outlier mark identified two possible reasons: 1) A decision to implement a Portfolio of Evidence where students could, on their own time, complete the exercises for a final mark, 2) A lecturer change.



**Figure 1: Module marks per year and mode of delivery**

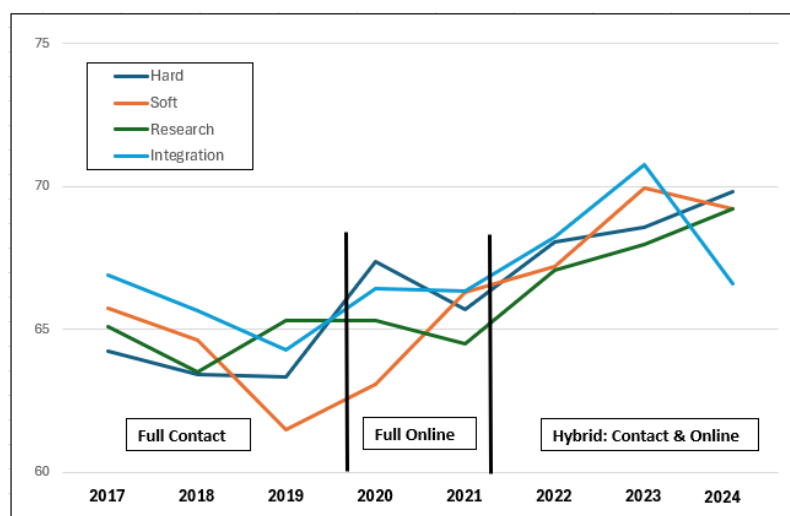
Comparing the mean values of each delivery mode, it is interesting to note that from 2017 to 2019, average academic performance steadily declined. However, since 2019, there has been a sustainable upward trend of marks (See Figure 2).





**Figure 2: Module marks per mode of delivery**

Clustering the descriptive results also provided handsome information. General reasoning regarding the online delivery mode favored soft management skill modules, and it was suspected that the sudden change would mostly have an adverse effect on the “hard management skills” and the integrative modules. Table 3 shows these marks.



**Figure 3: Academic performance across the hard, soft, integrative and research modules**

Figure 3 shows that this reasoning is unfounded and that the soft management skills performed the worst during the full-contact and online delivery modes. There is also no significant change in the research marks or the integrated modules (strategy, implementing strategy in a practical Company Project, or developing a strategic plan) between the clusters across the delivery modes.

### Identifying significant differences between delivery modes

The ANOVA identified only one module with no statistically significant difference ( $p \leq 0,05$ ;  $p \leq 0,10$ ). Welch’s Robust Test of Equality of Means (Welch) confirmed that Corporate Governance ( $p=0,740$ ) does not statistically differ significantly between the delivery modes (see Table 3) [25].

**Table 3: Statistically significant differences between modes of delivery (Welch analysis)**

Module		Statistica	df1	df2	Sig.
Company Project	Welch	13,841	2	388,337	0,000*
Corporate Governance	Welch	0,302	2	98,912	0,740
Dissertation	Welch	10,664	2	371,620	0,000*
Economics	Welch	70,186	2	810,594	0,000*
Entrepreneurship	Welch	58,398	2	300,001	0,000*
Financial Management	Welch	10,751	2	423,242	0,000*
Leadership	Welch	29,744	2	581,979	0,000*
Managerial Accounting	Welch	92,278	2	443,540	0,000*
Marketing	Welch	33,419	2	430,942	0,000*
Operations	Welch	5,068	2	369,047	0,007*
Research Methodology	Welch	30,665	2	367,709	0,000*
Strategy	Welch	78,088	2	376,739	0,000*

a. Asymptotically F distributed; \*  $p \leq 0,05$ ; \*\*  $p \leq 0,10$ .

Further scrutiny used Cohen's d-value (effect size) to determine the practical significant differences of modules across the different delivery modes (see Table 4) [26].

**Table 4: Practical significant differences of modules between the modes of delivery**

Module	Mode of delivery	N	Mean	Std. Dev.	Effect size	
					Full-Contact with...	Full-Online with....
Company Project	Full-Online	162	65,39	8,908	0,50**	
Economics	Full-Online	277	71,20	7,487	0,63**	
Managerial Accounting	Full-Online	179	76,18	14,083	0,95***	
Strategy	Full-Online	140	67,32	7,961	0,76**	
Economics	Hybrid	545	64,51	10,185		0,66**
Entrepreneurship	Hybrid	128	68,56	6,672	0,93***	0,77**
Leadership	Hybrid	329	72,05	9,416	0,54**	0,35*
Managerial Accounting	Hybrid	311	72,12	10,893	0,80***	0,30*
Marketing	Hybrid	254	72,20	9,245	0,57**	0,55**
Research Methodology	Hybrid	294	66,47	6,828	0,53**	0,31*
Strategy	Hybrid	276	68,89	8,711	0,90***	

\* Small effect; \*\* Medium effect; \*\*\* Large effect

Table 4 shows that a large practical difference ( $d \geq 0,8$ ) between full-contact and full-online exists for the module Managerial Accounting ( $d=0,95$ ). Likewise, large practical significant differences exist between the delivery modes Full-contact and Hybrid for the modules Entrepreneurship ( $d=0,93$ ), Managerial Accounting ( $d=0,80$ ) and Strategy ( $d=0,90$ ).

Regarding medium practical differences ( $0,5 \leq d < 0,8$ ) between Full-Contact and Full-Online in the modules Company Project ( $d=0,50$ ), Economics ( $d=0,63$ ) and Strategy ( $d=,76$ ). Likewise, medium

practical differences exist between the delivery modes Full-contact and Hybrid for the modules Leadership ( $d=0,54$ ), Marketing ( $d=0,57$ ) and Research Methodology ( $d=0,53$ ). Between the Full-online and Hybrid modes of delivery, medium practical differences exist in the modules Economics ( $d=,66$ ), Entrepreneurship ( $d=0,77$ ) and Marketing ( $d=0,55$ ).

Small practical differences are shown in the table for completeness's sake but are not interpreted because their effect has a minor practical influence.

## Acceptance/rejection of hypotheses

The results of this study definitively showed that the academic performance of Executive MBA students differs across the three delivery modes. As such, the null hypothesis ( $H_0$ : *Academic performance: Contact = Online = Hybrid*) is **rejected**, and the alternative hypothesis ( $H_a$ : *Academic performance: Contact  $\neq$  Online  $\neq$  Hybrid*) is **accepted**.

## Conclusion and discussion details

Emanating from the analysis and results, the following conclusions are made:

- All the modules retained relatively good marks when considering the mean values and standard deviations. These values show that although the abrupt transition to online teaching was challenging, students still maintained acceptable academic performance. Likewise, once they learned self-reliance and how to study online, the transition to a hybrid delivery mode positively influenced their academic performance. The full-online delivery mode seemingly reduced the students' over-reliance on their lecturers and enabled them to unlock academic material independently. This is an advantage in the hybrid delivery mode. Figure 2 substantiates this notion and shows that students' average marks improved and show an upward trend after introducing the hybrid mode.
- In the transition from the full-contact to the full-online delivery mode, the students did not (contrary to common belief) perform worse in the so-called “hard sciences” (such as financial management, Managerial Accounting or research statistics) versus the “soft sciences” (such as Marketing, Human Resources, or Leadership). Table 3 shows hardly any significant difference between the two classifications. This defeats the notion that the hard sciences require a personal touch in its tuition model. Likewise, the results show that dissertation study leading can be done equally well in person, online and in a hybrid format. Module integration in Strategy Formulation, Implementation of Strategy and Strategic Planning can also be successfully applied in each delivery mode.
- All the modules except corporate Governance show statistically significant performance differences between the delivery modes. However, when scrutinizing these results, the large, practically significant differences between Full-Contact and Full-Online delivery modes are limited to Entrepreneurship and Strategy modules. The high outlier value of Managerial Accounting causes suspicion about this module's practical differences. As such, it would be safer not to include its recorded differences than to do so.

In summary, this study concludes that the:

- hybrid delivery mode best facilitates the academic performance of post-pandemic Executive MBA students, and the
- hybrid model should be retained and refined for future Executive MBA education.

## Limitations

The study has two limitations. 1) The students are Executive MBA students, thus part-time and fully employed. These students mostly pay for their studies and are more serious about gaining knowledge. Therefore, the hybrid mode of delivery might not necessarily be the best model for parent-sponsored full-time campus students enjoying student life. 2) The other significant limitation is that this study evaluated the mode of delivery in time intervals. It did not use an authentic experimental design with control groups in each group to directly compare delivery modes for a specific year group. As such, the results are limited by the research design. This means the hybrid delivery mode yielded better academic performance among the 2022-2024 student groups than the contact delivery mode for the 2017-2019 student groups.

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