Reinventing the scuba diving training industry – A quantitative assessment of the current business offering and emerging need of change.

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A quantitative assessment of the current business offering and emerging need of change.

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1. Control Information

1.1 Author Biography

Damian Xuereb is a director of a consulting firm and a partner in an engineering firm. He led projects in IT, Consulting, Government, Telecoms, Construction & Estate, Automotive, Manufacturing and Gaming industries. His career saw major programmes, reforms, financial turnarounds, large-scale digital and engineering projects. Damian has extensive product design experience leading him to launch products. He holds post-graduate education in business management, statistics, international regulation and sits on various company boards as well as a higher educational institution. Damian is a technical diving instructor and recreationally a trimix open circuit and rebreather diver.

1.2 Supervisor

This project was supervised by Dr. Simon Caruana PhD, Institute of Tourism Studies (Malta) and peer reviewed by Prof. Alessandro Marroni, MD, MSc, FUHM, FECB (DAN).

1.3 Abstract

The diving training industry is based on a pyramid qualification model. The dominant players in the market account to most new diver training and certifications, having shaped the industry as we know it to date from a model that was shaped in the 1970's. There has been little change in the business of training new divers other than the advent of technical diving and online delivery of lectures. The business model relies on dive centres and diving instructors selling courses. Everyone gets a cut, albeit not in a proportional way. The model is reaching a point of saturation: lack of innovation is leading to reduced take up and eventually income by all parties involved. Reduced income results in reduced quality and as a direct result larger risk and safety concerns emerge. This thesis challenges the current model and attempts to shake up the business of diving through descriptive statistics being applied to test cause and effect of the change needed.

1.4 Key Words

#Diving industry strategy #Scuba business #Dive training business #scuba training economics #Diving training agencies.

1.5 Version

Draft 0.1 – April 30, 2023 – Concept outline.

Draft 0.2 – January 07, 2024 – Completed research and fine tuning the model.

Draft 0.3 – February 06, 2024 – First read though and corrections.

Draft 1.0 – April 22, 2024 – Statistics introduced.

Draft 1.1 – May 20, 2024 – Post Tutor review.

Draft 1.2 – May 23, 2024 – Turnit in Check + final edits.

Final 1.0 – May 27, 2024 – Final for submission.

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2. Introduction

There is ample active discussion about the scuba diving training industry. It is an industry driven by a passion for the sea and any professional participating in the industry will have a polarised if not flawed opinion of how it should run and what should change. The discussion is anecdotal, with very little business research being conducted and close to no empirically founded studies to test statements. Investigating it through statistics requires an understanding of the anecdotal evidence.

The sector is led by no more than a handful of brands who dominate the training standards globally. The mainstay of the business is recreational-focused tuition based on a pyramid structure where layer after layer, a diver starts from the very foundation and rises to the top of the training pyramid. Each level is based on a student studying theory related to the learning outcomes planned in a series of practical skills to be mastered. Levels unlock new and more complicated parallel streams to be explored, hence branching out paths allowing divers to widen their knowledge and the training agencies widen their revenue streams.

Training agencies have largely stayed away from innovation and change because to date it has worked well for them: the agencies sell training material and certifications at largely at the same price. Any business professional would consider this market sterile. There is little price differentiation between levels of the training. The courses are standardised into products being sold by volume. And this is exactly where the problem starts.

There is a disjoint in the revenue model of the diving training world as you move from training agency to the next level: instructors and dive centres. The latter two provide a service, not a product. They meet people in person and educate in a physical way delivering skills to the prospective client. Dive centres must invest in significant infrastructure to operate, are subject to regulations and must employ instructors. Instructors are either employed and wholly dependent on students being funnelled through the dive centres, or self-employed and either self-reliant on converting sales or work with through a dive centre through some arrangement. Diving is not an easy business and profit is directly related to volumes. The business model largely revolves around pushing the bottom layer of the training pyramid with much of the training happening for ‘try diving’ and the primary qualification layers commonly known as ‘open water diver’. This basic level of diving education is resource intensive and generates a low margin, if any at all unless the volumes there, leading to:

1. Reduced take up and income;
2. Quality skimping, resulting in less skilled divers, larger risk and safety concerns;
3. A general fallout due to poor quality with lesser individuals picking up the sport.
4. Disappointed diving professionals who are limited to reduced income and lesser use of skills.

The thesis will seek to test these statements through the general assessment of literature available. The main issue - from an academic perspective - is that the primary research is short of academic study testing business concepts. The Author considered proposing the aggregation of literature in an exploratory manner with the view of providing a research basis for reinventing diver conversion and long-term sustainability of the training agencies, leading to a waterfall effect on the industry. The research was aimed to develop quantitative testing of theory, grounding findings with empirically testing evidence.

The aim here is to provide an edge to diving businesses by identifying factors for the establishment of a new method for commercialisation of dive training. Using the 4Ps of marketing the thesis will test the following generalised theories.

1. Product: Good instruction and safe diving requires significantly more training than the minimum standards proposed by the training agencies;
2. Price: Training materials and skill development programmes are wrongly priced and positioned;
3. Place: Training and skills are largely dependent on the quality of the instructor and the dive centre. The training agency has no bearing; and
4. Promotion: The diving population is aging hence it is becoming less attractive to younger generations.

The criteria of success or otherwise of this thesis was largely related to the participation in the quantitative research as well as achieving the correct correlation and interdependency amongst variables proposed in the instrument. High degrees of correlation prove the theory correct.

The thesis tests the statements in the 4P model, aiming to provide a research basis for reinventing diver conversion and long-term sustainability of the training institutes, leading to a waterfall effect on the industry. The findings are aimed to give an edge to diving businesses by identifying new methods for commercialising diving training.

3. Theory & Literature review

McCarthy's (1960) 4P model provides an excellent helicopter view tool to assess the marketing mix. It has been successfully applied across industries, across decades. Academics have stretched and updated it with many more Ps but the 4-quadrant model remains a solid tool for management consultants to generalise their understanding of a product, it's effect on the market and opportunities to re-think non-functional parts of both product and market. The tool serves well in understanding the marketing mix of the dive training industry but given the manifest conflict the author harbors[1] to the business, artificial intelligence (AI) was used to understand the 4Ps. Google Gemini's AI (2024) eerily recreated the same thinking driving the current diving training industry:

"*Product:*

- *Streamline the Certification Process: Simplify the scuba diving certification process by offering comprehensive online modules, interactive simulations, and personalized guidance, reducing the time commitment and increasing accessibility for aspiring divers.*
- *Embrace Diversified Training Approaches: Cater to diverse learning styles by incorporating hands-on training, video tutorials, and virtual reality simulations, ensuring that every student can absorb information effectively and comfortably.*
- *Design Inclusive Training Programs: Create specialized training programs tailored to specific interests and skill levels, catering to beginners, advanced divers, and those seeking specialized certifications like underwater photography or wreck diving.*
- *Provide Continuous Learning Opportunities: Offer ongoing workshops, refresher courses, and specialty certifications to keep divers engaged and enhance their skills, fostering a lifelong passion for scuba diving.*

Price:

- *Offer Flexible Payment Plans: Provide flexible payment plans to accommodate different budgets, enabling individuals to spread out the cost of training and reduce financial barriers to entry.*

1 The Author is a certified by three leading training agencies and is in active dive instruction duties.

- *Introduce Group Discounts: Encourage group learning by offering discounts for enrolling in classes with friends or family, promoting social interaction and shared experiences among divers.*
- *Invest in Technology-Driven Training: Utilize technology to enhance the training experience, such as virtual reality simulations and online learning platforms, reducing the overall cost of training.*
- *Offer Value-Added Packages: Bundle scuba diving training with gear rentals, dive equipment discounts, or exclusive dive experiences to provide additional value to students.*

Place:

- *Establish Divers' Hub: Create a welcoming and accessible training centre, equipped with modern facilities, comfortable changing areas, and a relaxing environment.*
- *Partner with Local Dive Shops: Collaborate with local dive shops to offer training courses and certifications within their premises, expanding the reach of the training program and leveraging their expertise.*
- *Offer Remote Learning Options: Facilitate remote learning through online modules, video tutorials, and virtual reality simulations, providing flexibility for those who cannot attend in-person classes.*
- *Establish Training Centres in Popular Destinations: Locate training centres in popular scuba diving destinations, such as coastal cities, national parks, and island resorts, to capitalize on the high demand for diving experiences.*

Promotion:

- *Champion Social Responsibility Initiatives: Partner with environmental organisations and support coral reef restoration projects to promote the scuba diving business as a force for positive change in the marine environment.*
- *Collaborate with Local Businesses: Collaborate with local tourism boards, hospitality establishments, and adventure companies to cross-promote scuba diving training and other activities, expanding the reach of the training program.*
- *Targeted Online Marketing: Utilize targeted online advertising and social media campaigns to reach potential divers based on their interests, location, and diving experience level.*
- *Organize Community Events: Host dive-themed community events, such as underwater photography workshops, underwater film screenings, or social gatherings, to engage with potential divers and foster a sense of belonging."*

Google's Gemini AI is a generative artificial intelligence which outputs results based on text, images, social media and other sources it trawls on the Internet. In a somewhat different manner to ChatGPT, Bard is not strictly based on a learning pattern and structure of human input training data but is more freely based on Google's extensively powerful search engine which trawls relevant data across the internet and feeds in the AI with new data that has similar characteristics. Quite clearly, Bard wrapped up the business model as we know it in a couple of pages demonstrating - in the Author's opinion – that:

1. the AI's results unequivocally indicate a consensus based on web search results towards run-off-the-mill positioning. The model indicated formerly, is fine for any other entertainment or sports.
2. the business model is still largely PADI-driven[2]. The results clearly define PADI's core text on the web, and the AI found commonality with other hits, but clearly no outliers demonstrating reasonable innovation.
3. The anecdotal evidence matches up with Bard.

What would it take to reinvent the scuba diving training industry? Data indicates a declining take up in scuba diving training across the world (Kieran, 2021). Divers are an aging population (Buzzacott, 2018) with younger generations trying for thrills and not carrying through the commitment beyond introductory levels. The capital outlay needed to start the sport, increasing cost of living is often blamed for stifling take up.

The immediate industry driven solution to the problem, was a push on free diving. Training agencies rushed to become apnoea-focused[3] and produce certifications reflects the 'large interest in free diving' (De Vos, 2019). It did little to backfill the haemorrhage in scuba diving business. No official statistics detailing take up exist and being less equipment intense, means there is less revenue-generating capability due to the lesser consumption needed. Training agencies still sell there product, and simply transfer volume from one side to another.

On the other end of the spectrum is technical diving – an extreme sport by its very nature and materially more lucrative through the high capital expenditure needed to take off. That said,

2 https://medium.com/scubanomics/categories-quantity-of-dive-certifications-issued-by-dive-centers-independent-instructors-in-dff3f06327a5
3 https://www.padi.com/education/freediving

anything extreme will never be a volume business (Meissner, 2019) and hence can never provide leverage to mainstream business.

The talk amongst seasoned diving instructors is stark: there is no crop growing from the ground, inevitably leading to a fight for survival i.e. a race to the bottom ensues: cheaper training that is fragmented into smaller bites of ‘specialisations’ (DiveIn, 2021). PADI seems to lead this movement having a seemingly endless capacity to create ‘specialities’ (vide Image 1).

The current system within the diving industry uses specialisations to sell vertically and horizontally. By way of example a new dive may be pressured to take a "boat specialisation" course costing hundreds of Euros, regardless of their prior experience or qualifications[4]. Instructors and dive centres often cite "liability" or other justifications for requiring these micro-certifications. This approach creates a polarised market: some students become discouraged and abandon diving altogether, while experienced divers who have already completed dives from boats find the course irrelevant and frustrating. Some divers do choose to attend this training although online forums indicate polarised opinions[5].

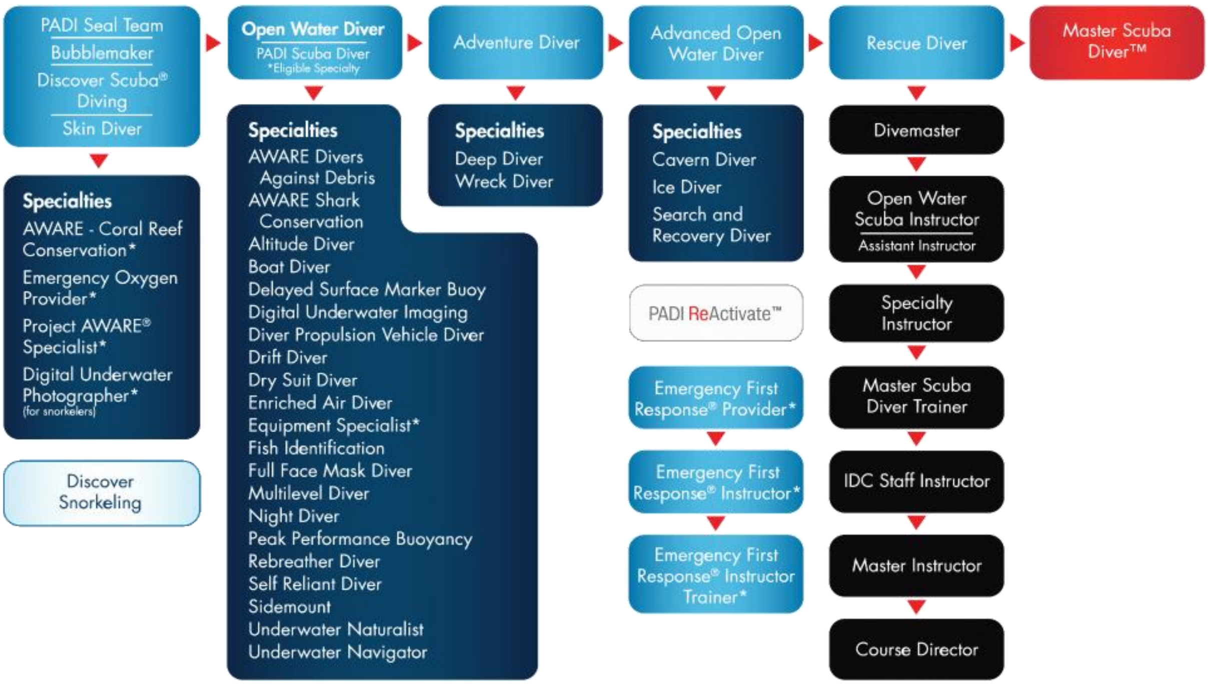

FIGURE 1: PADI COURSE FLOW CHART (SOURCE: PADI)

4 https://azulunlimited.com/scuba-diving-specialties/

5 https://scubaboard.com/community/threads/any-required-specialty-courses.

This approach is widely criticised with sarcastic references to PADI as “Put A Dollar In” whilst referring to staff layoffs[6], to outright poking about the specialisations as seen in Image 2 found on the website of major equipment stores:

FIGURE 2: MOCK UP PADI SPECIALISATION[7]

New training institutes are popping up in every size and form[8]. Certification equivalence and switchovers are a clear indicator (Costaricadiveandsurf.com, 2022) of lack innovation, and wilfully sterilised through the global training councils such as the WRSTC[9] that is no more than a union and lobby group.

FIGURE 3: SDI’S SPECIALISATION STACK UP TO ACHIEVE AN ADVANCED DIVER CERTIFICATION

The publication of the global training standards for recreational scuba diving such as ISO 24802-1:2014 put into question whether the current training agency led business model even has any future. The competencies of a scuba diver to be certified are detailed in the ISO. The Standard further specifies the conditions under which training is provided, in addition to the

6 https://scubaboard.com/community/threads/padi-laying-off-staff-and-maintaining-fees.600186/

7 https://www.facebook.com/TheScubaShop.co.za/photos/pb.100063449815857.-2207520000../2535840973213704/?type=3

8 https://en.wikipedia.org/wiki/List_of_diver_certification_organizations

9 World Recreational Scuba Training Council (WRSTC)

general requirements for recreational diving service provision in accordance with ISO 24803, the standard covering the actual service provision.

With minimum specification being published by the reputable and accepted ISO training agencies need to quickly understand that philosophies such as minimum viable product (MVP), Agile and Lean are applicable to the scuba diving industry. This realisation has not yet happened, and the effect of fragmentation can be seen down the value chain were dive centres all attempt to sell more and more downstream. In practice it results into low revenue and fragmentation, leading to a boom in micro dive centres. By way of example Malta, a diving mecca[10] now has over 50 registered dive centres[11] in an island 27km across, of which majority employ no more that 2-3 employees.

All this is happening in a parallel world where regulations, risk management (Setyoko et al., 2019), diving medicine and increased safety requirements requires market consolidation and economies of scale[12]. Safety and risk management requires a higher level of professionalism and quality focus which is often not reflected in mass tourism diving practices known as 'PADI factories'[13] where a 'Discover Scuba Diving' and 'Open Water Course' are compressed into as little time as possible, with the lowest overhead possible. The argument was put forward by Powell (2022), who hinted that training may be going away from the philosophy safety, polished skills, meticulous preparation and risk management. Powell extensively advocates focusing upon the lessons learnt within the tec sphere to be transferred to recreational diving. Yet the 'No Decompression Diving' seems to be a glass ceiling allowing diving to be trained lightly, cheaply through an increasingly low margin industry.

Fragmentation inevitably leads to lower revenues, with less instructors willing to take up the baton (Keiran, 2023). Despite the increase in promotion through social media[14] there is less conversion, less lasting divers. The correlation of these variables is anecdotal, and its effects only starting to be noted. The business of diving needs to investigate its market strategically and build an evidence-based model that thoroughly understands the modern needs. Indeed, even building this thesis was a challenge: initial research data is absent, without which evidence

10 https://divemagazine.com/scuba-diving-travel/best-places-in-the-world-to-scuba-dive

11 https://www.visitmalta.com/en/a/dive-centres/

12 https://medium.com/scubanomics/strategy-consistency-in-the-quality-of-the-scuba-diving-experience-a88995937965

13 https://www.reddit.com/r/scuba/comments/18fy0t4/padi_open_water_certification_at_scuba_dive_shop/

14 https://divemagazine.com/scuba-diving-training/learning-to-dive-which-training-agency-is-best

needed to trigger a change will not be there. This concern shared by Kieran (2021) who is emerging as a lead researcher in this field publishing ample statistics on the available on the diving business.

The replacement rate of divers is very much a concern. Attracting youths gravitates around Web 2.0 tools where smiling divers on Instagram[15] seems to be the order of the day. Happy images do not address the number of challenges being faced by the younger generation of scuba divers, including the key ones identified by the World Economic Forum (2024):

1. Unemployment and underemployment: The unemployment rate for young people is higher than the overall unemployment rate. In addition, many young people are underemployed, meaning that they are working in jobs that do not require their full skills and education.

2. Student debt: The cost of study has been rising steadily, and many young people are graduating with significant amounts of student debt. This debt can make it difficult for young people to save for a down payment on a house or start a family.

3. The rising cost of living: The cost of living, including housing, food, and transportation, has been rising faster than wages. This makes it difficult for young people to afford the basics.

4. Climate change: Climate change is a major threat to the environment, and it is also a threat to the future of scuba diving. As the oceans warm and acidify, coral reefs and other marine ecosystems are being damaged. This could make it difficult for scuba divers to find places to dive.

5. Lack of job security: The job market is becoming increasingly volatile, and young people are more likely to be laid off than older workers. This lack of job security can make it difficult for young people to plan.

6. Declining social safety nets: such as Social Security and medical care, are being eroded. This means that young people will have to rely more on themselves in retirement.

15 https://www.instagram.com/ssi_international/?hl=en

These challenges will make it difficult for the younger generation of scuba divers to pursue their passion for the sport. The latter part of the review argues there are several strategies that can be pursued to address these challenges, such as investing in different methods of delivering diving education and training by reducing the cost of training. Only by addressing these challenges, can the diving industry ensure that the younger generation of scuba divers can pursue the sport and enjoy it for many years to come. To date, there does not appear to be the willingness to move to a model that thinks laterally.

The author refers to McCarthy's 4P model to review and challenge the current offering whilst attempting to determine key elements needed to reinvent the model of scuba diving training, and with it as a waterfall effect, the revenue model surrounding the industry.

3.1 Product

Diving training is not unlike the Pokémon © Card Trading game[16], where divers are invited to collect cards though speciality routes. It neither differs much from any pyramid scheme. For all intents and purposes, becoming a diving professional is very similar to becoming a Tupperware © Consultant[17]. A professional need to level up to access the next level, which gives you additional range and training abilities.

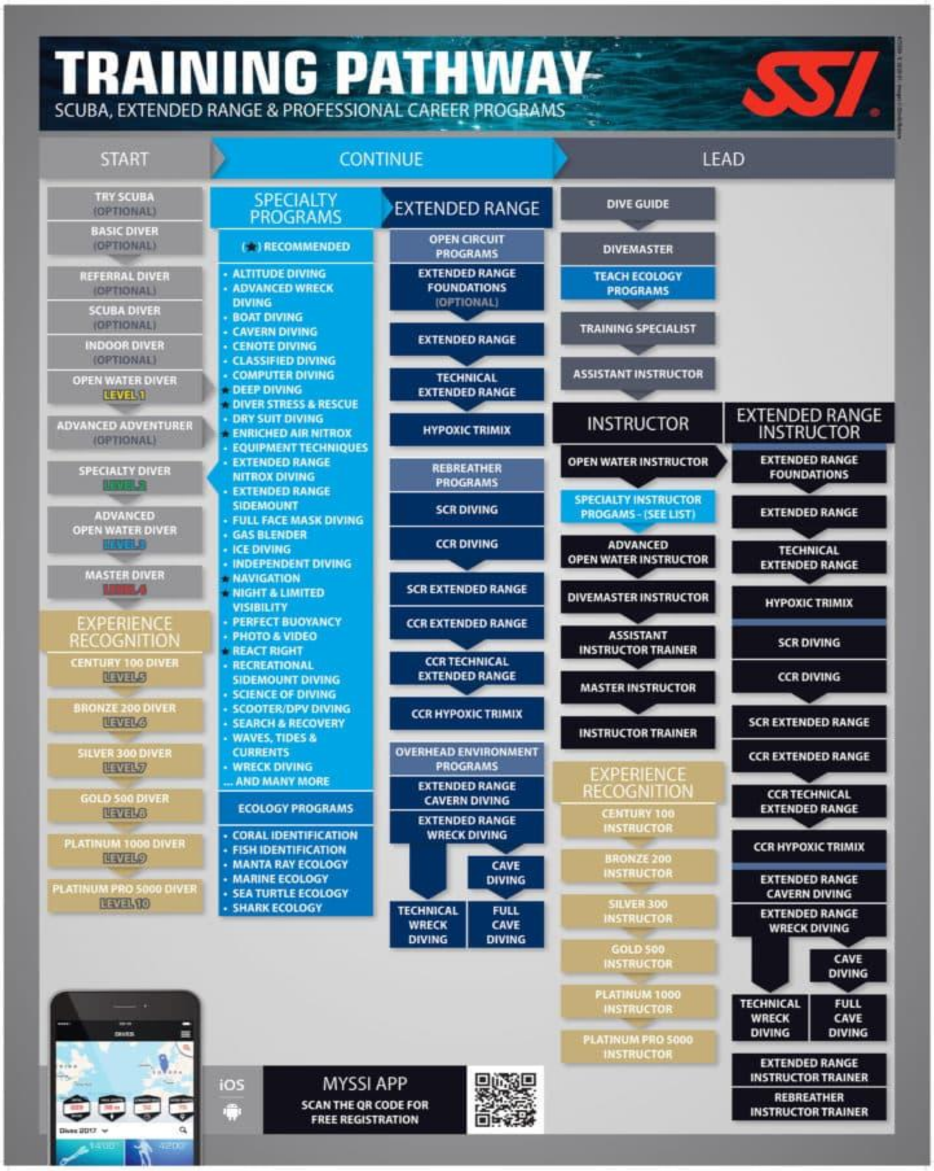

FIGURE 4: SSI'S PYRAMID SYSTEM AND INSTRUCTOR PATHWAY

Leveling up is expensive and modular. It drives students to spend days reading through online literature after which practical sessions are attended with an instructor in a dive centre.

16 https://www.pokemon.com/us/pokemon-tcg

17 https://www.tupperware.com/pages/join-us

The business model has little to do with learning outcomes of a diver over time. The process of learning, like in any other situation, varies from person to person. The diving industry differs to this model usually, with most candidates having limited time to learn the course they set out for, because the student is normally on holiday with little time left, or taking time off for the course. As a result, diving courses have learning outcomes condensed for faster delivery in tandem with today's rushed lifestyles. Whilst this may prove economically feasible for dive centres, several prominent instructors maintain the reduced course times are insufficient to create good divers[18]. It leads to concerns that training is being delivered in a 'tick the boxes' method – hence issuing certifications without properly learning the skills (*'cert washing'*, as colloquially known)[19].

Poorly trained divers tend expect bite sized courses – frequently asking 'how deep can I go now?'. This mindset is a result on a compromise in quality, which may increase diving accidents and fatalities. Gaspari (2020) draws a solid analogy: some states in Australia require at least 100 hours of practice with a licensed motor driver before obtaining a motor driver's license. This practice has resulted in one of the lowest road tolls in the world. In contrast, Thailand has no such requirement, and the result is one of the highest road death tolls in the world, about six times that of Australia. Although not suggesting that every scuba diver should practice for 100 hours before going into open water, there is albeit unproven, a correlation between hours practiced with an instructor and the mistake driven accidents and fatalities post training.

The diving training process for all major training agencies is largely composed of theoretical chapters consisting of e-learning reading material, videos, knowledge reviews at the end of each chapter and a final exam. E-learning is a good way to reduce classroom time, but it is not for everyone[20]. Classroom education is more beneficial to those that need information reworded to a language that they clearly understand, providing a greater opportunity to ask questions and allows the instructor to observe if the student truly understands the information. This method has largely been abandoned by dive centres in favour of e-learning as it is more cost efficient as well as practical for holiday divers who can finish off the theory before the practice[21].

18 https://medium.com/scubanomics/survey-results-am-i-a-bad-apple-quality-safety-by-dive-instructors-244e64f24fa9

19 https://www.reddit.com/r/scuba/comments/10a3koi/certification_levels_gatekeeping_general_question/

20 https://www.tdisdi.com/sdi-diver-news/teaching-scuba-myths/

21 https://blog.padi.com/is-elearning-suitable-for-a-new-diver/

Students that make the grade pass to the practical side performing skills in water/pool sessions. Rushing or skipping these skills could have tragic consequences in the future and this is where most instructors preach the importance of quality delivery of training with good reason: theory is known to be less memorable to student but extensive skill practice and develops good scuba diving habits (Davies, 2022). Understanding theoretical knowledge and practicing it extensively underwater is critical to a scuba diver's safety, ensuring that students can manage any underwater problems that may arise (Tuttle, 2015). The more divers practice a new skill, the denser the myelin in their brains becomes, which helps them learn even better.

Confined water skills are emergency-based skills, and the confined water sessions may be the only opportunity for students to practice the skills before they need to perform them in the event of an accident. The skills should have enough time allocated for students to master and have appropriate cognitive recall and ability if or when such an emergency occurs. This is rarely the case: cost-efficiency drives most dive centres[22] and an instructor is limited to giving a minimum standard of education - way below the practice levels required to deal with an emergency[23].

The foundation of being a good and safe diver is learning how to dive, which includes body positioning, kicking style, buoyancy control, and good breathing habits (Cudel 2021). These skills require several dives to manage. The number of dives it takes to become a confident diver varies from person to person. Some may feel confident after 10 dives, while others may need 50 or even 100 dives. Confidence depends on several factors, including natural aptitude for diving, level of comfort in the water, and the diver’s exposure to different diving environments. PADI, SDI and SSI all state ‘X’ number of dives. The line of defence is that the onus is on the instructor to decide whether to pass or fail a student. Few instructors fail students for fear of creating a negative client relationship and triggering refunds leading to diving being pushed for everyone, if a candidate pays and signs some papers[24].

A training agency committed to quality would promote understanding *failure* if need be. Failure would be a key performance indicator which would be openly published as well as

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22 https://www.reddit.com/r/scuba/comments/1104nt2/what_are_the_profit_margins_of_running_a_dive/

23 https://www.aussiediversphuket.com/creating-divers-not-just-certifications/

24 https://scubaboard.com/community/threads/padi-liability-release-form-eu-vs-non-eu.619286/

perhaps skill ranking rather than a simplistic tick box as is being advocated by Gareth Lock through the programme '*Human Factors Skills in Diving*'[25] in the more technical arena of diving. On the beginner diver remit, for instance, controlling buoyancy is one of the most important skills every diver should master (NAUI, 2023). This is best done in open water and under the instructor's supervision, as divers cannot watch themselves while diving. Having good buoyancy control will avoid damaging corals, marine life, and the fragile sea floor but also ensure the diver is safer throughout the dive (ibid). Most divers will need to complete at least 50 dives before they start to feel comfortable with their buoyancy control, way beyond what is offered in the first levels of scuba diving training. Experienced instructors in Malta earn between Euro15 and Euro25 per hour: it would take a much higher investment for a student to take a student from 'aware' to 'confident' in the skills as the current diving product offers.

The discussion could go on for much longer but concerns about length and limits of this study will require a wrap up the discussion on product: as currently packaged the product of scuba diving training is based on the packaging of dives in a finite amount of time. Whilst every practical and academic reference points towards 'repeat and build' to improve skills, the diving industry has for decades pushed small modules, where a diver get certified in a few days, and may or may not come back for more.

Through this research the Author is proposing a radical change to the product that will be partially tested through statistics later in this thesis:

1. All material should be made available for free as it is already readily available. All the (small) unique pieces of information scattered in the extensive eLearning libraries developed by the training agencies, should be joined into three exclusive training programmes:
    a. **Sports Diver**: covering all the disciplines of recreational diving, based on ISO Specification[26].
    b. **Technical Diver**: covering the extension beyond recreational diving to the deep sea, commercial, scientific activities and adopting further and in more complex methods the learning placed in Sports Diver.

25 https://www.thehumandiver.com/homepage
26 https://www.iso.org/standard/60460.html

   c. **Dive Professional**: covering the business of diving education from either sports or technical diving, as well as for profit support of deep sea, commercial, scientific activities[27].

2. Training should change from the current 'short course' structure to a mentoring method based on 'pay as you go' proposed in the 'Price' section of this study.
3. The progression of a candidate should be based on skill-by-skill testing and not by the certificates an individual holds.
4. Material is reviewed and updated on a continuous basis, and continuous improvement model adopted, where what you learnt yesterday, is not necessarily good practice any longer. Decompression models provide an excellent example of evolution[28].
5. Dive professionals should become the focus of the new business model like instructors in any other discipline. Professionals will require a warrant geared at higher levels of quality based on regular audit for knowledge, skills and professionalism with annual audits documenting continuous improvement. Training agencies have a unique space to get into this, before Governments around the world do and set a unique, independent testing criterion.

The resultant theory being proposed requires the product to change based on the following principle:

"Good instruction and safe diving require significantly more training than the minimum standards proposed by the training agencies.".

27 https://www.iso.org/standard/83308.html

28 https://www.shearwater.com/monthly-blog-posts/evolution-of-dive-planning/

3.2 Price

Individual agencies and the World Recreational Scuba Training Council (WRSTC) determine training limits. The WRSTC works to create minimum recreational diving training standards across the globe based on research and training data. The WRSTC is composed of the leading training agencies and serves as a medium of educational standardisation amongst participants. The effect is dual pronged: standardisation sterilises competition amongst agencies avoiding any market disruptions and creates a training cartel for instructors and students alike. It leaves the quality of the actual eLearning materials and marketing as the only differentiation factor. The result is evident and brazenly publicised as seen in Image 5.

FIGURE 5: TRAINING AGENCIES EQUIVALENCES

This 'averaging' of training standards and procedures allows interoperability: students can switch agencies and there is mutual recognition. The training standard and procedures published by the different agencies vary marginally. Standards largely equate each other and are largely based on depth limits for recreational activities, as well as decompression diving.

Depth limits is a key management criterion in the advancement of a diving training. Depth is an undisputable finite measurement of progress based on data from thousands of dives, upon which a consistent training system may be built. The training system pitches itself as equipping divers with the skills to safely make dives at appropriate levels. The marketing pitch is to 'dive within the limits of your training"[29].

29 https://blog.padi.com/how-deep-can-open-water-vs-advanced-divers-go/

For example, during a "try dive", participants are limited to a maximum depth of 12 meters under the direct supervision of an instructor, while open water divers are limited to a depth of 18 meters, while at the advanced open-water level, the limit is 30 meters. Most agencies set the depth limit for recreational diving at 40 meters with additional deep-diver training. Divers who are tempted to push further depths can continue education through technical diving. This is the basis of the pyramid scheme "Want to go deeper? Pay more. Want to try something different? Pay more."[30]

It is important to note that scuba diving courses train divers for specific conditions to the environment in which the course takes place. Therefore, if one learns to dive in warm, clear, calm seas, it's not recommended to jump into cold, low visibility water prone to harsh currents without additional training and experience. This is also used as a precursor to sell further training programs available for specific environments, such as drift diving, deep diving, dry suit diving, or navigational dives (ibid).

All scuba diving courses offered by different training agencies comprise the same components: theory, confined water practice, and open water training. It doesn't matter if student learns to dive with a local club on weekends or at a dive resort during holidays; the skill based instruction is the same.

Course pricing varies very little: on average training agencies charge Euro100 for course and certification[31]. Some agencies may charge extra for additional resources such as books, merchandise and memberships. The rest of cost to the end student are the dive centres costs: instruction, gases, profit and external factors such as boat hire or swimming pool fees.

The weakness in the current training price model is the composed of the following:

1. The training agencies now follow the ISO standards, hence offering near identical training standards and procedures;
2. The current model of paying for readily available diving knowledge is outdated. Courses being sold carry knowledge that is 30 years old and largely unchanged (e.g.

30 Vide *Figure 4*

31 https://medium.com/@seatribecoron/sdi-vs-padi-vs-ssi-choosing-the-best-scuba-certification-for-you-deab40fe8902

Emergency ascents – proven quantitatively to be a lead killer through Arterial Gas Embolism[32]) at times ripped off from other training agencies[33] as well as freely available on the internet; and

3. Quality assurance does not really happen (Keiran, 2022) and if it did it would better be focused on instructor led skills.

If the current number of training agencies remain in competition the price will eventually be squeezed down. Little differentiation, ISO-driven minimum standards, the emergence of freely available knowledge, little to no quality assurance and client management that limits itself to mailshots, will eventually succumb to the first disruptor in the market. Keiran's Net Promoter Score research (2023) confirms this trend - divers make no difference and indeed do not promote diving training agencies at all.

Ideas for future development of the pricing model could include a larger focus on the instructor – discussed in the next section. The Author believes that a financially resilient industry will rely further upon independent instructors – a trend noticeable with the increase in freelance professionals (Kieran, 2023). The below theorem provides a basis for discussion on the pricing model:

1. Change in the billing method for e-learning materials through the introduction of an ongoing subscription fee where all materials are immediately available online through the various training agencies. Certification will still require passing online courses, exams and wet training, but the bulk of fees incurred will only kick in from the exam onwards.
2. Development of a model where an instructor is paired with a student for a long-term period, rather than a one-time course. The instructor takes a 'mentor' role for as long as the subscription is paid, and the student in turn has access to the instructor provides guidance and training. The pairing can also be 'passportable' in a way that, a student may switch location and switch instructor, as long as the new pair match training requirements, diving philosophy and aspirations.

32 https://dan.org/alert-diver/article/emergency-ascents-managing-the-risks/

33 https://www.reddit.com/r/scuba/comments/18j0n46/any_reason_not_to_mix_and_match_certifications/

3. Pay as you go training, where students purchase credits (potentially through a tokenised financial asset) that are transportable across training agencies, destinations, and instructors, decoupling the dive centre and increasing passportability. Credits would relate to hours, rather than training programmes, where skill development is prioritised.

The antecedents to change here is:

"Training materials and skill development programmes are wrongly priced and positioned."

3.3 Place

The internet is ripe with comments claiming that certain dive training agencies are safer than others, but the available statistics suggest that this is untrue. The question of which scuba training agency is best for diving is frequently asked online and often leads to heated debates due to varying agency loyalties and financial self-interests in the business of diving.

Nowadays regulation requires training agencies to comply with International (ISO) safety standards for scuba diving, which may be supplemented by additional regional or national standards in most countries. Adopting standards enhances the competitive advantages and comparative advantages which improves the quality of diving tourism in the respective countries (Bazazo & Alananzeh, 2020). This is a recognised fact and training agencies have no way out of standardisation which is why the major training agencies are participants to the World Recreational Scuba Training Council (WRSTC). WRSTC ensures standardisation in training and safety standards across the industry worldwide. Thus, the standards under which the courses are conducted remain largely the same, irrespective of the training agency and not requiring Government intervention, other than that of adopting ISO.

Leading training agencies create branding subtilties to create different perceptions. At the time of writing of this thesis PADI is depicting a retro dive centre feel, harking on nostalgia, sea and sun; SSI goes for female-first and a multisport approach, whilst SDI uses its sister brand TDI to exude 'all in divers' from the tech diving regime. Branding is irrelevant to recreational divers. Research carried out by Keiran (2023), who identified that recreational scuba divers do not recognise agency brand and do not promote it.

The training agency has little bearing on the outcome of an educational programme[34]. Many a dive professional observe good and bad divers certified by all training agencies. What really effects safety is that the individual instructor (Keiran, 2021). The instructor determines the quality of the course. The minor differences between agency standards are insignificant to an instructor who takes the liberty to optimise the training for a student's needs and personal philosophy in educational development.

It is not uncommon for diving professionals to note differences in club divers: new divers fresh from their training program being safer and more conscientious divers than more experienced club-diving peers. The performance standards expected of students and instructors alike should vary little be it both the theoretical and water skills. This is not the reality and training agencies have very lax standards of monitoring quality (Keiran, 2021). Instructor warrants are not reviewed frequently (say annually) and continuing professional education does not exist as a professional requirement. In absence of continuous monitoring, agencies fall short of testing constant output which may change over time, irrespective of how rugged qualification training standards are set at the start of an instructor's career.

This discussion postulates that the key differentiators in the dive training business the instructor and the respectively the dive centre backing him, and not the training agency (ibid), which validates the common saying that when it comes to choosing a dive training programme, it is essential to consider who will be the instructor and how willing a student is to apply himself to the training regimen.

Training in touristic destinations such as Malta or Egypt has always hovered around a dive centre, due to the extensive logistical considerations, gas fills and heavy equipment. The requirement here for quality of service is a simple one: clean environment, quality equipment – in service, knowledgeable staff and a good price mix. The business model of dive centres is a three-tier model that has been around for decades:

1. Attract customers with cheap diving experiences. Dive centres often offer introductory scuba diving lessons for a fraction of the cost of a full certification course. This method,

34 https://medium.com/@seatribecoron/sdi-vs-padi-vs-ssi-choosing-the-best-scuba-certification-for-you-deab40fe8902

introduce volumes to scuba diving and get them interested in learning more. The programmes are called ‘Try Scuba’, ‘Scuba Discovery’ or ‘Discover Scuba Diving.[35]

2. Selling dive gear. Once a customer has taken a scuba diving lesson, they are more likely to be interested in buying their own gear. Local dive shops often mark up the price of dive gear significantly, knowing that customers are often willing to pay a premium for convenience.

3. Booking divers on dive trips. Once a diver has their own gear, they are more likely to book dive trips and sell specialisation courses by forbidding people from going wreck dives – by way of example – before having a wreck specialisation.

The above model has been doomed since the advent of online retail and dive warehouses selling volume which steadily declined in the last years. Post COVID 19, dive centres refocused their energy on high-quality training and specialisation (like Rebreather Diving). This is why ‘place’ in the 4Ps of the diving training industry is probably the most important factor of the marketing mix, an urgent need to change to an instructor led industry, that generates revenue through measurable and ongoing quality training.

Quality becomes measurable when rigid standardisation comes in. The foremost agencies promoting rigidity are the technical agencies: GUE and TDI. Although rigidity does not ensure competence of an instructor it seems to be better received by the market. Accordingly, Keiran’s research (2023) indicates that scuba divers are critical of dive training agencies, with only DAN (Divers Alert Network), TDI and GUE scoring points in a Net Promoter Score. Incidentally all three mentioned above have rigorous technical diving backgrounds with medically grounded foundations. One hopes, the same rigour is passed down from instructor trainer to instructor candidate who in turn stands firm against lax, flawed or outdated approaches to diving is minimised.

35 https://www.divessi.com/en/get-certified/scuba-diving/try-scuba, https://www.padi.com/courses/discover-scuba-diving, https://www.tdisdi.com/sdi/get-certified/scuba-discovery-program/

Training agencies view instructors as training clients (Keiran 2021), with little interest in them other than selling courses to them or through them. By way of example, the requirement for PADI instructor to move up to a Course Director (a more senior rung) is to have issued at least:

- 250 PADI certifications
- 50 continuing education certifications
- 5 rescue certifications
- 5 Divemaster certifications
- 15 specialty certifications[36]

What PADI is saying here is that the instructor needs to have sold hundreds of thousands worth of training to make it to the next level. Other agencies mimic this model. Training agencies do not audit instructor for quality and maintenance of standards in teaching. Nor do they ask for academic contributions. Neither do they consider research and innovation in the field. Nor do they consider other achievements, be it professional or academic. Training agencies only consider success based on the sales of certifications. This leads instructors and students into a fundamentally outdated business model: the model does not reward the instructor for personal achievement in kind or in currency. A full-time instructor is a lowly paid employee, normally working 6 days in the sun and sea. It is a hard job with high stakes. No wonder that once COVID hit the world, instructors quickly found new roles in other industries which have them work easier jobs and earn more. Covid-19 led to a global instructor shortage the world is now experiencing (Bennett, 2021). Helene (2020) argues that if the working conditions do not improve this trend will continue and it will have an inevitably negative effect on the industry.

The decline in instructors and negative NPS scores underlined by Keiran (2023) build a case for a redesign of the business model before the diving fractionalises itself further. Some initial considerations could be theorised from the insightful study titled “Safety Priorities and Underestimations in Recreational Scuba Diving Operations” (Lucrezi et al., 2018)   follows:

1. Governments need to take a lead on regulation. Self-regulation only goes so far when profit comes drives training agencies. Training agencies will never force quality as it will inevitably reduce revenue[37].

36 https://pros-blog.padi.com/becoming-a-padi-course-director/

37 https://ricochet.com/287152/laissez-faire-scuba-part-1-how-an-unregulated-industry-triumphed/

2. Quality is largely tied with price. Cutthroat pricing is leading dive centres to offer poor quality training, which results in new divers not continuing the spot. The reality is that less dive centres should exist as to create a market condition where there is a lesser supply to the demand but one of higher quality (as is the case in tec diving). Again, this can only be achieved through regulation which will force consolidation.

3. Diving training agencies need to consolidate too pooling members together and turning instructors into a ‘subagent’, with a view of creating an economic environment in which the instructor profits form the association.

The theory being explored here is that:

“Training and skills are dependent on the instructor, less so on the dive centre. The training agency has no bearing.”

3.4 Promotion

According to PADI (2022), the average entry-level diver is 27-30 years old, college educated, and male (60 percent are male). For many years the gender ratio of 65 percent male versus 35 percent female remained constant. However, there’s been a shift in the past five years and women now make up 40 percent of new divers. That is good progress, but the pool of potential women divers is still massive. PADI also states, that the average dive traveller is between 33 and 55 years old. The majority is male, but women are steadily catching up, from 34% in 2014 to 37% in 2016. Dive travellers generally have a high income, are educated and lead an active, healthy lifestyle.

According to the Business of Diving Institute (BODI, 2023) the scuba diving industry in the United States has returned to pre-pandemic levels in 2022 but the market experienced a significant change in the type of divers involved. The number of people who participated in scuba diving last year was like 2019, but an increasing number of them were "casual" divers, as opposed to "core" divers, whose participation continued to decline. Unlike other areas of business, diving has been staged to change intrinsically post COVID.

BODI (2023) defines casual divers as those who do fewer than eight dives per year, while core divers do more. In 2022, 2.7 million Americans, less than 1% of the US population, scuba-dived at least once, which was a 7.3% increase from the previous year. The participation rate of casual divers rose by 12.1%, while that of core divers fell by -5.1%.

This trend of casual diving seems to have been accelerated by the pandemic. Scuba diving is increasingly becoming an activity that is done casually during vacations that include other activities. According to BODI (2023) the younger generations are not as committed to scuba diving as the baby boomers were. Scuba diving is just one thing they do in-between other activities. BODI continues that this trend has adversely affected diving-equipment sales, particularly less travel-friendly items like buoyancy compensators and regulators.

Diving can be intolerant to casual young divers. Condescending comments made by older generations about young people come in thick and thin[38]. The Author argues that these comments are uninformed and insensitive to the challenges that young people face, such as the rising cost of living and high levels of debt. Pew Research Center found that young people in the United States are more likely to be living in poverty than older generations[39]. The study also found that young people are more likely to be saddled with student debt. These findings support the Author's argument that young people are facing economic challenges that make it difficult for them to afford expensive hobbies.

The Author also questions the calls for more expensive entry-level courses – the result may keep young people out of the hobby. The condescending attitude of an instructor – often seen in both dive centers as well as popular diving forums such as Scubaboard towards young people is counterproductive and contributes to the decline of the diving community. Ageist discourse, such as the measurement of experience by number of dives over number of years, is language that stereotypes or discriminates against people based on their age.

It is also downright incorrect to measure skill through numbers. One technical dive by way of example, is exponentially more complex than a recreational dive. The training required to get

38 https://www.divebuddy.com/blog.aspx?BlogID=11701

39 https://www.pewresearch.org/short-reads/2022/07/20/young-adults-in-u-s-are-much-more-likely-than-50-years-ago-to-be-living-in-a-multigenerational-household/

to this stage, preparation for the dive, focus and mental and physical strength needed clearly demarks the incorrectness and fallacy of statements like ‘5000 dives of experience’[40].

Ageist discourse can be harmful because it can perpetuate negative stereotypes[41] about young people and make it difficult for them to achieve their goals raising important questions about the future of the diving community and its replacement rate. If the community continues to be dominated by older, macho male, generations, it is likely to become less vibrant and welcoming to young people. This could have a negative impact on the future of the sport.

Considering the above could be a valuable contribution to the discussion about ageism and the future of the diving community. Thoughtful analysis of the challenges facing young people and could suggest ways to make the diving community more inclusive.

Kieran (2023) believes that the decline in committed diving should not be attributed to younger divers but to the diving industry's business model, which has failed to adapt sufficiently to market developments. While baby boomers still accounted for 8.8% of the market in 2022, the biggest sector was millennials (23-42-year-olds) at 18.8%, followed closely by Generation Z (aged up to 22) at 17.4% and Generation X (aged 43-57), who accounted for 13.4%.

Kieran (2023) also makes a case that the diving industry needs to do more to appeal to younger divers. This includes offering more flexible training options, such as online courses, and making diving equipment more affordable and travel friendly. The industry also needs to do a better job of marketing scuba diving to younger people and showing them how it can be a fun and rewarding activity. At this point diving still looks like an expensive hobby - which it is from an initial outlay – but not any more than other sports once it gets going.

Despite the shift towards casual diving, scuba-diving remained one of the fastest-growing water sports activities in 2022, level with boardsailing/windsurfing and second only to jet-skiing in the USA[42]. However, this trend is unlikely to bring much joy to divers, as the overall number of divers remains relatively low. The changing face of scuba diving is a challenge for the

40 https://dan.org/alert-diver/article/the-effect-of-experience-on-risk/

41 https://www.tdisdi.com/sdi-diver-news/sexism-and-ageism/

42 https://divernet.com/scuba-news/scuba-recovers-but-core-divers-decline

industry, but it also presents an opportunity. By adapting to the needs of younger divers, the industry can ensure its long-term health and growth.

The barriers to entry for younger generations are always the same ones: tight budget, popcorn brain[43] and busy schedules[44]. There are several things that can be done to increase the participation rate in scuba diving for younger generations. These include making scuba diving more:

1. Affordable. This could be done by offering scholarships or discounts to younger divers, or by making it easier to rent equipment.
2. Accessible. This could be done by opening more dive shops and training centres in urban areas, or by offering more weekend and evening classes.
3. Appealing to younger people. This could be done by marketing scuba diving as a fun and exciting activity, and by highlighting the benefits of scuba diving for mental and physical health.
4. Young. The earlier people start scuba diving, the more likely they are to stick with it. Schools and youth organisations could offer scuba diving programs to introduce young people to the sport.

In addition to these general strategies, there are several specific things that can be done to increase the participation rate in scuba diving for younger generations. For example, dive centres and training agencies could offer special programs for teenagers and young adults.

These programs could include:

1. Group discounts. This would make it more affordable for young people to dive together.
2. Social events. This would give young people a chance to meet other divers and make friends[45].

43 https://www.theguardian.com/science/2024/feb/13/popcorn-brain-could-the-snack-be-the-key-to-understanding-why-its-so-hard-to-concentrate
44 https://www.sciencedaily.com/releases/2014/08/140815192357.htm
45 https://divemed.com/diving-community-in-malta/

3. Competitions. This would give young people a chance to test their skills and compete against each other.
4. Volunteer opportunities. This would give young people a chance to give back to the diving community and learn about marine conservation. Malta's Zibel NGO is a radiant example[46].
5. Education. Focusing on the maths, physics, chemistry and biology of diving has an innate correlation to the studies younger generation have studied or are still studying. Again, Malta's Degree in Diving Safety Management[47] (of which the Author forms part) is a flag bearer – taking it to a younger student could extend its benefits.

By taking these steps diving will become accessible and appealing to younger generations ensuring the industry continues to thrive for years to come. Participation rate in scuba diving may increase by using a wider catchment net considering environmental, social, and corporate governance (ESG) frameworks. Making the sport accessible to people with disabilities is a solid ESG thrust. There are several training agencies that that offer programs for people with disabilities[48], but the physical requirements and logistics are extensive[49]. These programs can help to make scuba diving more accessible to people who might not otherwise be able to participate and will most probably necessitate non-for-profit financing[50].

Scuba diving as a sustainable activity. Scuba diving is an excellent gateway to learning about marine life and the importance of protecting the ocean environment. Dive centres and training agencies can promote scuba diving as a sustainable activity by offering courses on marine conservation and by supporting organisations that are working to protect the ocean.

In a first of kind paper Carreño et al. (2020) discusses the beneficial effects of scuba diving on mental health, another societal pivot point in the ESG frameworks. The paper concludes that scuba diving activities has a positive effect for human mental health, particularly among subjects with regular medication intake. The authors (ibid) argue:

46 https://www.zibel.org/about
47 https://its.edu.mt/course?course_code=PT6DSM
48 https://www.bsac.com/training/instructor-courses/diving-for-all-programme/
49 https://www.nauticteam.com/en/diving-for-people-with-disabilities/
50 https://www.diverseability.eu/

“*Exposure to outdoor blue spaces can help improve human health by reducing stress, promoting social relationships, and physical activity. While most studies have focused on the adverse health effects of scuba diving, very few have assessed its health benefits.*”

The development of promotional tools and programmes for this unexplored facet of diving, may potentially be a life changer.

The theory being proposed here is that:

“The diving population is aging hence it is becoming less attractive to younger generations”.

Altogether the theory being proposed for research in the following sections will embark on an exploratory mission of proofing or disproving the following statements:

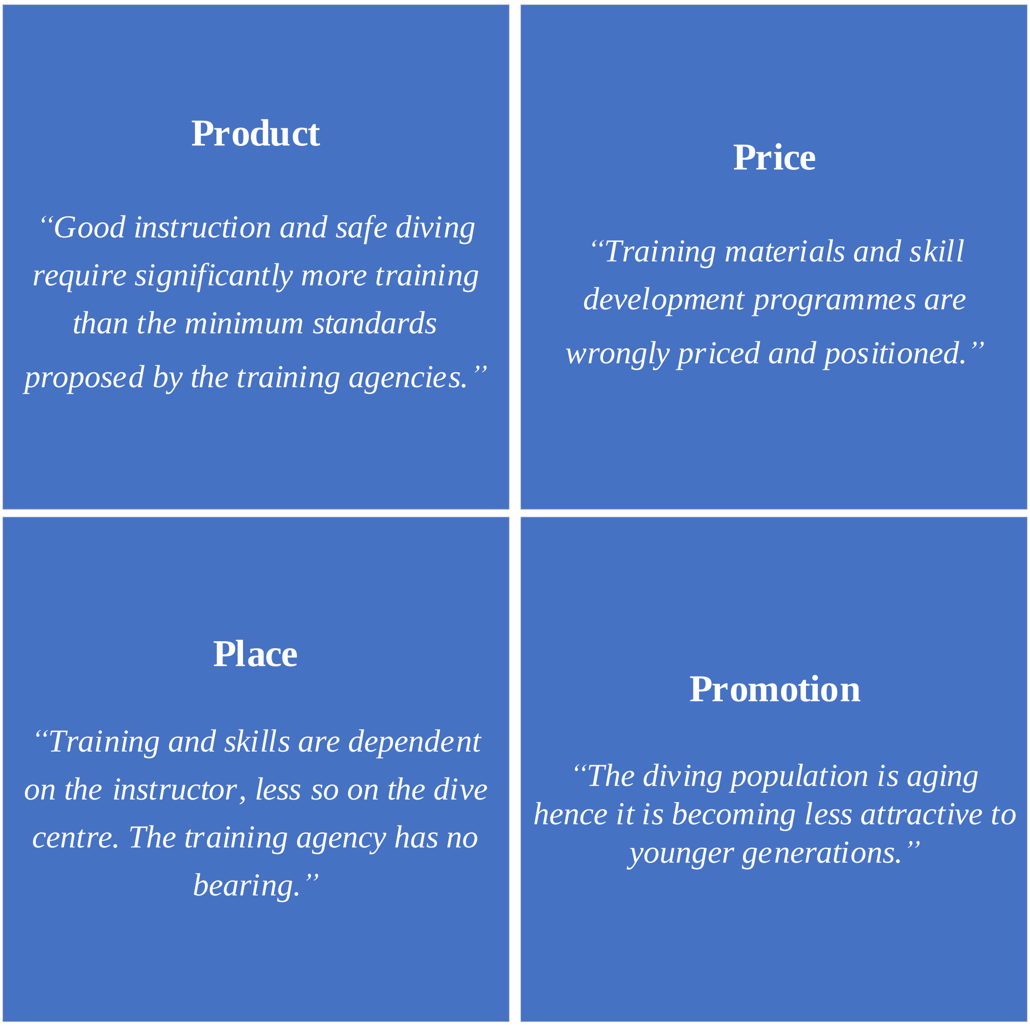

IMAGE 6: FIGURE 6: 4PS APPLIED TO THE CURRENT DIVING MARKET

The next section attempts to generalise some experimental antecedents and expected outcomes to develop a Likert-type questionnaire to qualify or dismiss the literature review.

4. Research Methodology

This chapter proposes a theory to attempt methods that may reinvent the scuba diving training industry. The Author explains the derived research hypotheses, study design, details regarding the methods used to test the hypotheses and assess the sample, the variables to be examined, chosen measurement instruments, and means of data collection. The chapter concludes with a summary of the general turnout and results of research. The research findings will be presented in the next chapter.

This study will attempt to refute this statement by conducting research on a global scale to allow the possible generalisation of the theory being proposed to cultures like the research sample while providing a deeper insight on the scuba diving training industry. As the literature review indicates, although preliminary investigation was conducted in the field, no instrument so far proposed was ever tested on a global scale.

The literature review examines the construct of dive training industry to identify attachment to the current model as well as proposed changes. The conceptualisation developed from the literature review served to emerge the hypotheses necessary to operationalise the construct of change being proposed for the industry. A summary of the generalised hypotheses and the expected out comes are found in the table 1.

TABLE 1: 4PS GENERALISED HYPOTHESES

4Ps	Antecedents	Expected Outcomes
Product	Training hours are not enough.	Skill-by-skill certification as opposed to course-by-course would result in better divers.
Product	Current education model is stretched and bloated.	Pyramid course scheme is repetitive and as a result the educational content adds lower value.
Place	Training agencies are becoming irrelevant.	Students refer to diving materials on YouTube, Google as well as other training agencies.
Place	Instructors are centric to the industry.	Further focus on instructor quality.
Price	Students favour subscription-based learning instead of course by course (pyramid scheme).	Creating a pay-as-you-go (selling instructor hours) rather than singular courses is beneficial to students.
Price	Instructor to continue following a student after training ends and support future development.	Long term mentoring of the same student may result in more committed divers
Price	Diving industry limits quality due to the low price of training	Government should take a role in regulating the diving industry as opposed to the self-regulating model currently in place.
Price	There is too much competition in the industry resulting in a price/quality drop.	Instructors are underpaid and the current economic model does not make financial sense for a full-time employment.
Promotion	Volunteering opportunities would give young people a chance to give back to the diving community and learn about marine conservation.	Diving should be promoted as a sustainable activity. It promotes contact with nature, better mental health and new social relationships.
Promotion	Making diving more affordable for younger divers would boost the industry.	Diving should be offered as a sport in schools and youth organisations.
Promotion	More should be done to make diving more inclusive, helping individuals that need support to dive.	Making diving more accessible, through better infrastructure would increase take up.

4.1 Assumption of the Study and Design

The research assumes a ‘postpositive knowledge claim’. Creswell (2003: p7) suggests that post positivism “reflects a deterministic philosophy in which the causes will probably determine the effects and outcomes”. In this case, the problem studied will reflect a need to examine antecedents of the needs of change in the diving business that influence the outcomes in a reductionistic manner. The model put forward in Section 4. attempts to reduce the idea into a “small, discrete set of ideas to test, such as variables that constitute hypothesis and research questions” (ibid: p7). In this way, the outcome of the research aims at being a “careful observation and measurement of the objective reality that exists ‘out there’ in the world” (ibid: p7). Regard was also given to the key considerations as recommended by Philips and Burbules (2000) needed to strengthen a postpositivist approach.

In the Author’s opinion, such an assumption and related considerations are required to inject an empirical contribution to the existing body of knowledge where most of the evidence is yet anecdotal. This claim to knowledge also reflects the assumptions of the works that have influenced this study as indicated below.

4.2 Quantitative research method

The Author developed the literature review based on a compilation of anecdotal evidence cross referenced with the literature available. A level of qualitative market research was conducted through the direct work experience of the Author in the industry, having worked as both a Diving Instructor and Recreational Instructor with Dive Centres that cater for both types of divers. The tool was amply discussed and tested with key personalities in the Malta diving scene. The Author followed the principles detailed in Churchill’s (1979) multi-stage design for fielding a pilot quantitative survey, using a Likert-type four scale, multi-item questionnaire distributed amongst diving professionals being occasionally involved, new to the business or all out hobbyists and highly committed divers (Davis, 2019). Likert-type four scale was selected with the wilful intent of removing neutral biases. The instrument used was a twenty-eight (28) - item questionnaire was developed using Microsoft Forms and the questions were split into 5 ‘pages’, logically organised to contain Demographics, Product, Price, Place and Promotion, in line with Table 1. The full questionnaire is available in Annex 1.

4.2.1 The sample size

The exact number of diving professionals worldwide is difficult to determine, as there is no single organisation that tracks this data. However, some estimates suggest that there are over 100,000 diving professionals worldwide, with the majority being scuba diving instructors. PADI is the world's largest scuba diving training organisation, and it reports that it has over 128,000 professional members worldwide, although it is unclear if this refers to active professionals, or certified professionals. Other diving training organisations, such as SSI and TDI, also have large numbers of professional members. Estimates that seem to be likely put the total number of diving professionals worldwide in the range of 100,000 to 200,000. For the purposes of this study the higher number (200,000) was selected as a population and sample was determined to be representative with the following confidence intervals, assuming an acceptable error rate of 5% as per the below table:

TABLE 2: SAMPLE SIZE CALCULATIONS

Population	Confidence	Margin of Error	Ideal sample
200,000	99%	5%	661
	95%	5%	384

4.2.3 Accessible population

The target population of the quantitative study was "Diving Professionals" i.e.

1. individuals within the business of diving;
2. with access to the Internet during the data collection period;
3. irrespective of gender, geographic and demographic variables.

The method used to collect data allowed a larger number of items and larger sample yet being easy to manage. Statistical intervention was used when the correct representation was not achieved.

4.2.4 Inclusion/ exclusion criteria

Non-diving professionals were not considered eligible for participation.

4.2.5 Sampling

Due to the online data collection process the author had no specific control over which subjects complete the survey. Since the research was interested in investigating general relationships amongst variables pertinent to the business of diving, this constraint control over participants was deemed inconsequential to the ultimate value of the research.

4.2.6 Data Subjects

Literature and practice helped develop a series of initial questions was developed and discussed in detail with two (2) academically oriented. The input was crucial and served to fine tune the model. The main decisions taken here had a strategic impact on the sample:

1. As discussed formerly it was decided to limit the sample to diving professionals;
    a. The target population of the quantitative study was "Diving Professionals" i.e.. individuals within the business of diving with access to Internet in all industries both public and private.
2. The age groups were shrunk into smaller groups;
3. The English used in the questions was simplified;
4. The questions were sterilised as far as possible to reduce the number of items on test to one item with exception of one item, which would have lost sense.

The refined instrument was first discussed with 2 leading instructor trainers, and then launched within a controlled group of dive professionals (6 people) to test for understanding, neutrality (or bias) and general feedback. Feedback was positive and no further changes were deemed necessary.

4.2.7 Recruitment plans

The Internet was used as the only source for generating the database of the research population. No direct contact with any individuals or sectors of low response was ever promoted. The Author let faith - so to say - determine the actual participation, in the hope of achieving a high representativeness.

The questionnaire was published globally on social media networks aimed primarily at diving professionals. This included:

1. Global Diving Instructors
2. Diving Jobs Worldwide
3. Diving Jobs All Around The World

4. Scubaboard.com

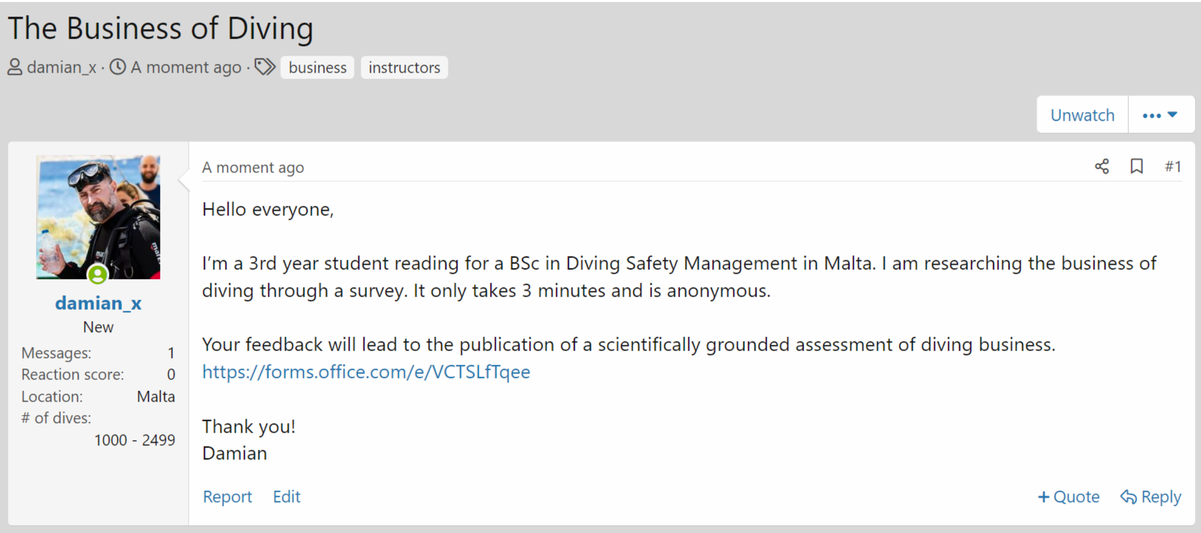

FIGURE 7: QUESTIONNAIRE CALLOUTS IN ALL THE VARIOUS FORA FOR DIVE PROFESSIONALS

4.2.8 Risks and Counter measures

The risks and countermeasures that emerged from this method are listed below:

1. The potential bias in participation from one destination (or country) to another. This risk was not considered consequential as diving is an international business, based on an identical business model worldwide, and as such, distinction in location, is being used to understand reach rather than relevance of the questionnaire;
2. The possibility of exclusion of core segments of society, including older generations not familiar with ICT. Distinguishing questions relating to age were introduced as an attempt to counterbalance coefficients in statistical computation (Fowler, 1988; Creswell, 2003). Participation of these groups was sought specifically as initial research indicates an aging diving industry;
3. The risk of low response rates and the consequent impossibility of generalising the response rates and derived statistical analytics to the entire population. As to generating adequate responses, all the appropriate response enhancement techniques were used including aggressive pushing, pre-notification of targeted respondents and follow-up campaigns; and
4. The risk of low response rate due to the sensitivity and the confidentiality of the information being gathered. This risk was countered by giving all the necessary

assurances of anonymity whilst not including any direct or indirect data gathering that could lead to the subject of the survey.

5. The survey ran for a total of 12 months a precursor to having enough participation to consider the sample valid for descriptive statistics with a low margin of error.

5. Results

The purpose of this chapter is to present the findings of the research in the format of the several explorative findings initiated by the data. The empirical data is presented according to the structure selected for the research design. In the quantitative study the main theory was assessed against a 28-item instrument measuring four sets of predictors represented within the 4P marketing mix:

1) Product: “Good instruction and safe diving require significantly more training than the minimum standards proposed by the training agencies.”.
2) Place: “Training and skills are largely dependent on the instructor and the dive centre. The training agency has no bearing.”
3) Price: “Training materials and skill development programmes are wrongly priced and positioned”
4) Promotion: “The diving population is aging hence it is becoming less attractive to younger generations”

The outcome of the research demonstrates to what extent the professional diving community agree or disagree to the statements allowing further generalisation needed to change the business of diving training.

5.1 Demographics of the Sample

A total of 379 diving professionals participated, just short of the 95% confidence interval. The participation can be considered significant and representative. Demographics were collected for the purpose of future reference and further study but are worth none the less exploring and describing.

5.1.1 Age

Five age brackets were sampled. A clear bias toward middle age in the industry and worryingly, a minute contribution from the younger generations. This goes to demonstrate an upcoming issue with the current business model described by Keiran (2023) of employing young underpaid dreamers.

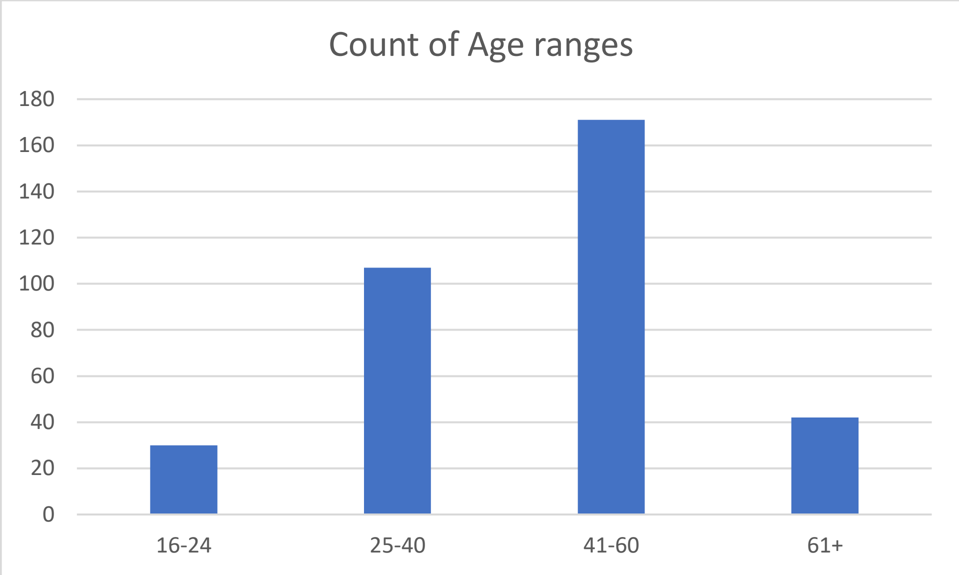

FIGURE 8: AGE BRACKETS OF PARTICIPANTS

The data also concur with DAN's indication of the aging diving community (DAN, 2016). The statement aligns professionals to recreational diver.

5.1.2 Diving Experience

The diving experience seems to line up with the age statement above. As professional divers age, their experience increases, and they do not seem to be hanging dry. The table below also indicates that the professional diving community hovers in upper echelon of experience with only 20% of the community accounting to less than 200 dives.

TABLE 3: DIVING EXPERIENCE EXPRESSED IN NUMBER OF DIVES

What is your total number of dives?	
1000+	202
201-1000	99
51-200	59
0-50	19
Grand Total	**379**

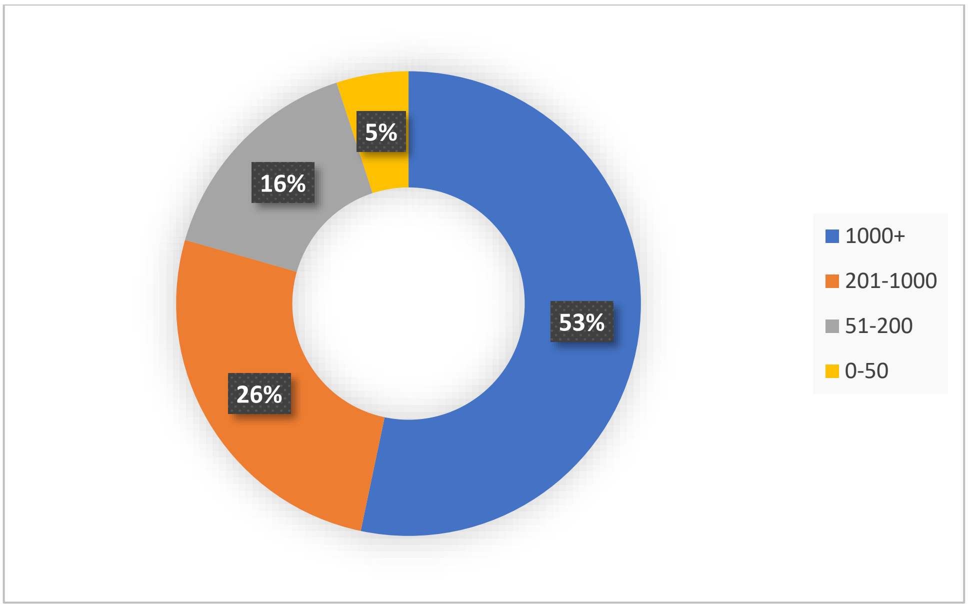

FIGURE 9: EXPERIENCE EXPRESSED IN NUMBER OF DIVES

With 1000+ dives accounts to most of the survey's population one could also start to understand the ageist statements described in the literature review. What is also pertinent to note from the table below is that Technical Diving Instructors (47) account to 50% of the responses of Diving Instructors (95) in the key working band 41-60, whilst dive masters (22) account to a limited proportion of 25%. This variance is significant compared to the 25-40 bracket where dive masters account to 14 to 33 instructors. Dive masters - the entry point to dive professionals - are either taking years to step up to an instructor or dropping out of the industry.

TABLE 4: EXPERIENCE PER AGE VS TYPE OF PROFESSIONAL

What is your relationship with the diving industry?	What is your total number of dives?	Age ranges					
		41-60	25-40	61+	31-60	16-24	Grand Total
Diving Instructor	1000+	56	24	22	7		109
	201-1000	39	9			7	55
	51-200					7	7
Diving Instructor Total		**95**	**33**	**22**	**7**	**14**	**171**
Technical Diving Instructor (Total)	**1000+**	**47**	**7**	**16**			**70**
On my way to become a dive professional	0-50		3				3
	201-1000	8	7				15
	51-200		21		8	7	36
On my way to become a dive professional Total		**8**	**31**		**8**	**7**	**54**
Divemaster	201-1000	22	7				29
	51-200		7			9	16
Divemaster Total		**22**	**14**			**9**	**45**
Related professional, not instructing.	0-50	8			8		16
	1000+	8		7	8		23
Related professional, not instructing. Total		**16**		**7**	**16**		**39**
Grand Total		**188**	**85**	**45**	**31**	**30**	**379**

The table above can be further generalised in a future study, where word count does not stifle the Author.

5.1.3 Location

The sample collected responses from a variety of locations, and interesting indicates that despite the location, the sport joins a global community. US and Malta dominate the numbers, both English speaking: the only language used for the survey (a valid note for future research).

Malta may have featured more strongly due to a bias i.e. the links of the Author with the diving community although the island is indeed a diving mecca.

Table 5: Participant Per Location

Location (Country)?	
United States	70
Malta	68
Italy	32
Germany	30
United Kingdom	19
Spain	13
Mexico	10
Thailand	9
Switzerland	8
Tenerife	8
Cyprus	8
Luxembourg	8
Czech republic	8
Northern Ireland	8
Australia	7
Mozambique	7
Canada	7
Maldives	6
Croatia	5
Poland	5
South Africa	4
Greece	4
Sweden	4
Norway	4
France	4
Egypt	4
Belgium	3
Indonesia	3
Bali	3
Portugal	3
Austria	2
Azores	2
New Zealand	1
Finland	1
Sardegna	1
Grand Total	**379**

The high degree of variance in location viewed in the light of the descriptive statistics employed later also indicate symbioses across the globe. It may be a large planet, but divers generally seem to be evolving in the same way.

5.2 Product

The table below summarises the main thrust behind the questions used to probe the current product being offered. Descriptive statistics were used to probe the current product with expected out comes where possible introduced to test regression.

Means score was calculated on the 4-point Likert, 1 being the least score and 4 the highest score; i.e. 4 indicates a confirmation of the question used in the survey.

TABLE 6: 'PRODUCT' DESCRIPTIVE STATISTICS

4Ps	**Antecedents**	**Mean**	**STD DEV (P)**	**Expected Outcomes**	**Mean**	**STD DEV (P)**
Product	Training hours are not enough.	2.94	0.81	Skill-by-skill certification as opposed to course-by-course would result in better divers.	2.70	1.04
Product	Pyramid course scheme is repetitive and as a result the educational content adds lower value.	2.67	0.74	eLearning modules are at times repetitive.	2.67	0.74

There is consensus (2.96) that the current model does not offer enough training hours to ensure confident divers with low deviation (0.81) and the proposed outcome of moving to skill-by-skill certification has a means in the same range (2.70) with no deviation (1.04). Interpreting the score could lead to the development of more compact, less loaded courses with higher number of hours.

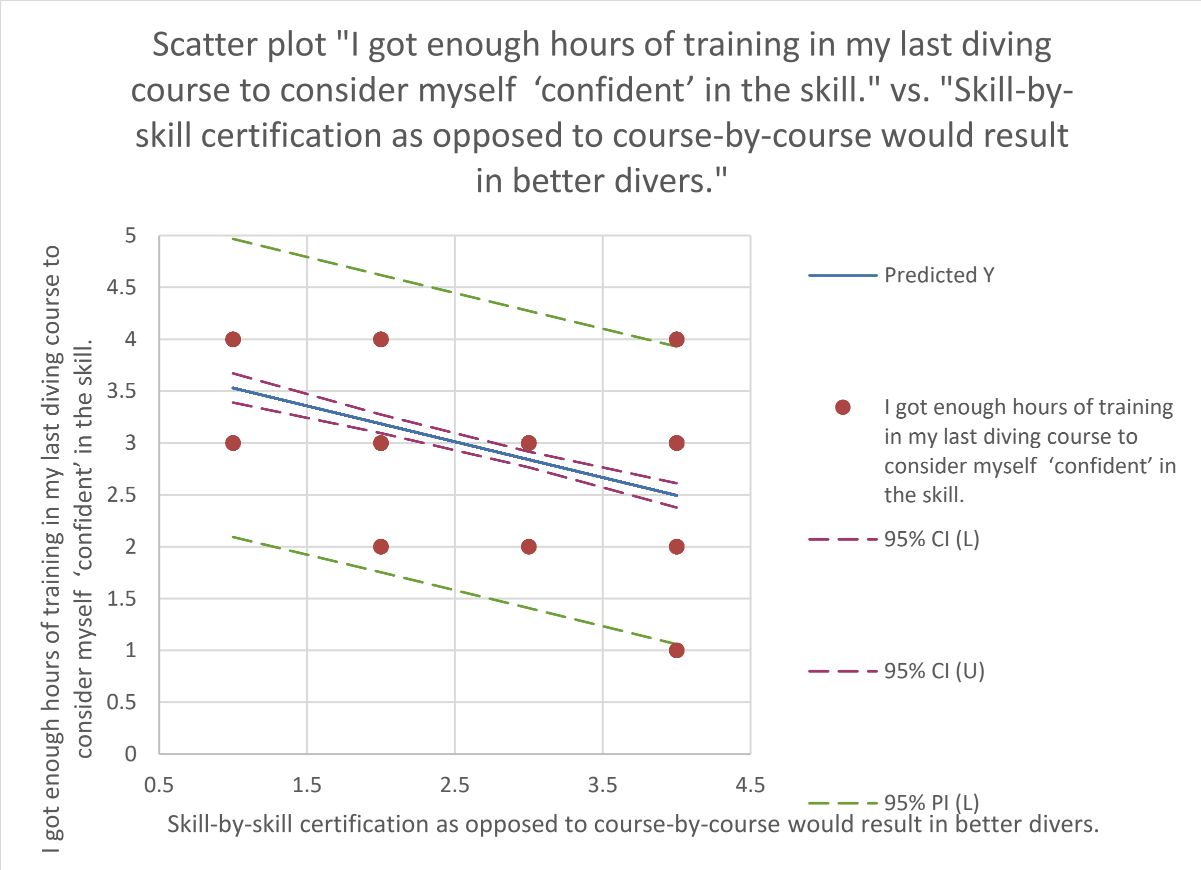

FIGURE 10: HOURS OF TRAINING VS. SKILL-BY-SKILL CERTIFICATION

The results of the theory in an r (slope) of 0.4447 and an R-squared of 0.1977, indicate a weak positive linear relationship between the two variables examined in the model. The results suggest a positive trend, but it's a weak one. The model explains only a small portion of the variation in the dependent variable, indicating that there are likely other important factors at play that are not captured by this instrument which require further exploration.

Instructors mildly feel (mean=2.67) that the current pyramid model is repetitive, although deviation increased in this question (SD=0.74) it can still be consistent with generalised perception, that the model still adds value to the industry.

5.3 Place

The general arguments brought forward in the Literature Review is that training agencies continue to lose relevance as opposed to instructor quality which is becoming more centric to a safe and long-standing diving business. Unlike popular belief, the dive centre is no even being considered as a ‘place’ in the 4Ps model utilised, given that dive centres are being viewed largely as a base of operations and logistics, with the instructor taking the central role of the ‘place of diving’.

TABLE 7: ‘PLACE’ DESCRIPTIVE STATISTICS

4Ps	Antecedents	Mean	STD DEV (P)	Expected Outcomes	Mean	STD DEV (P)
Place	Training agencies are becoming irrelevant.	2.81	1.01	Students refer to diving materials on YouTube, Google as well as other training agencies.	2.81	1.01
Place	Instructors are centric to the industry.	3.47	0.61	The diving industry should focus more on the quality of its instructors.	3.47	0.61

Respondents clearly fell in the upper means (2.81/4) with a precise 1.01 standard deviation indicating that marketing can only take training agencies so far whilst the other sources of freely available knowledge is often referenced during the educational process of a diver. Even more resounding was the 3.47 mean score probing the importance of quality instructors although STD DEV fell to 0.61 – still relational but significantly lower indicating some strong outliers in the responses.

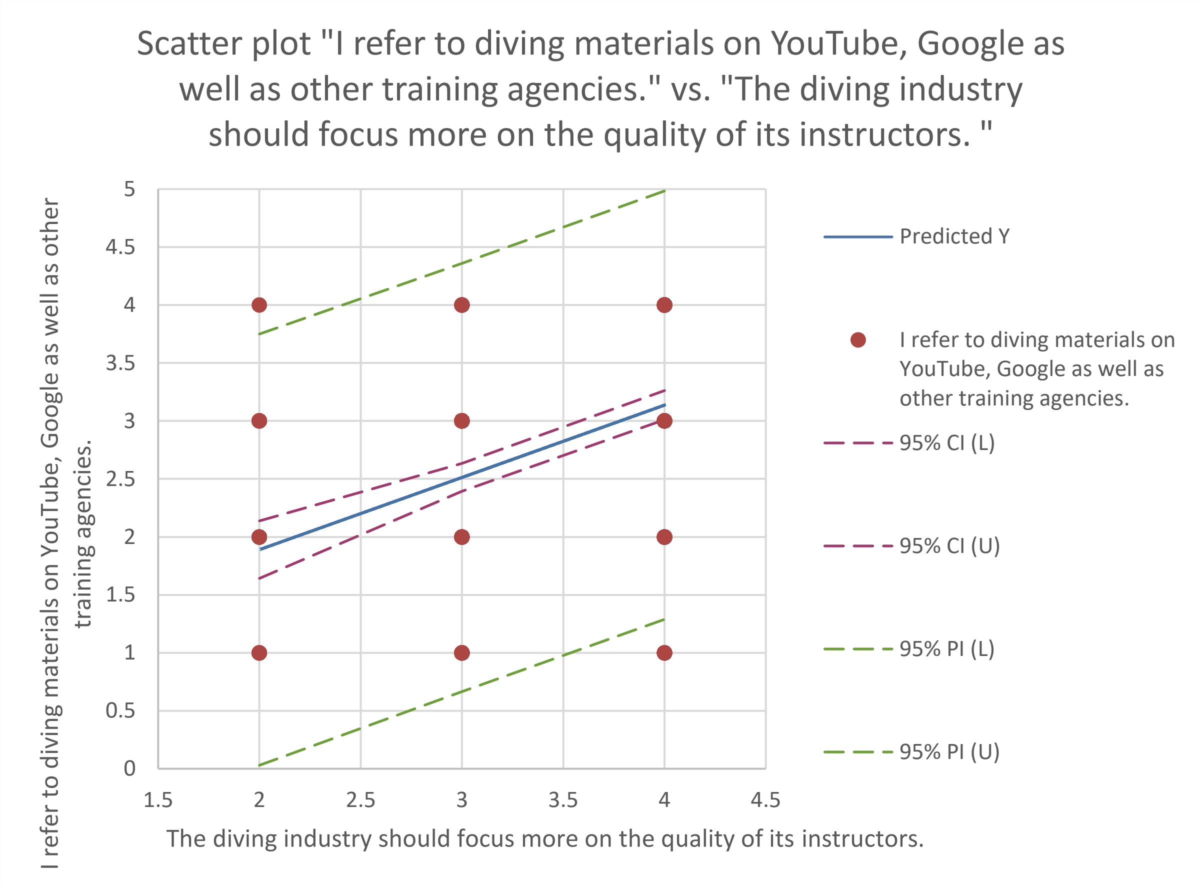

FIGURE 11: DIVING MATERIALS VS. INSTRUCTOR QUALITY

A weak relationship between the two statements: "I refer to diving materials on YouTube, Google as well as other training agencies" and "The diving industry should focus more on the quality of its instructors." exists. At 0.3762, R indicates a weak positive correlation meaning there is a tendency for the statements to move in the same direction. In this case, someone who refers to various learning materials might also be more likely to endorse improvement in instructor quality, but the connection is not strong. R-squared is at 0.1415 meaning only 14.15% of the variation in the statement about instructor quality can be explained by the statement about using various learning materials. This weak correlation does not necessarily mean there is no connection between these ideas. A student who seeks out various learning materials might be more critical of their learning experience, leading them to value instructor quality more. However, other factors could also influence their opinion on instructors. The people who agree with both statements might simply be those who are generally more engaged with the diving community and have opinions on both learning materials and instructors. What it doesn't mean is that just because someone uses various learning resources doesn't mean they automatically think instructor quality is poor.

Overall, the results suggest that there is less affinity to brand and that students are motivated to using various learning resources and their opinions on instructor quality.

5.4 Price

Price takes up much of the discussion in diving business as it does in any other entertainment industry and rightly so: entertainment is non-essential and the market can be very sensitive to price-quality mixes. The arguments brought forward from the discussion in chapter three (3) covered price significantly, give its direct effect on the Profit & Loss of diving business. The survey probed Price intensely with the aim of creating a starting point for future reform of the dive training business.

TABLE 8: 'PRICE' DESCRIPTIVE STATISTICS

4Ps	Antecedents	Mean	STD DEV (P)	Expected Outcomes	Mean	STD DEV (P)
Price	Students favour subscription-based learning instead of course by course (pyramid scheme).	2.55	0.96	Creating a pay-as-you-go (selling instructor hours) rather than singular courses is beneficial to students.	2.93	0.97
Price	Instructor to continue following a student after training ends and support future development.	3.09	0.67	Long term mentoring of the same student may result in more committed divers.	3.35	0.72
Price	Diving industry limits quality due to the low price of training.	2.73	1.07	Government should take a role in regulating the diving industry as opposed to the self-regulating model currently in place.	2.36	1.18
Price	There is too much competition in the industry resulting in a price/quality drop.	2.64	1.00	Instructors are underpaid and the current economic model does not make financial sense for a full-time employment.	3.40	0.63

Diving professionals warmed up to the idea of a subscription model (2.55/4) with a low level of deviation in their replies. Whilst this may be novel thinking in diving, it is commonplace in many other areas of business, and indeed increasingly present in our daily lives. Purchasing entertainment content by way of example: YouTube, Spotify, Apple Music and so on. In line with it, selling instructor hours rather than course rang a stronger bell (2.93) with no deviation (0.97). The fast rise of independent instructors selling hours and day rates may be testimony to the revenue model being more favourable than the current course by course. This is of course a proposal that completely overhauls the current business model of the diving training agencies, who pushed the current model since the 1970s.

The author proceeded in using Regression (R) to test the hypothesis:

> *"The cost of course-by-course eLearning materials should be replaced with an ongoing subscription that gives immediate access to all materials introduced. Vs Creating a pay-as-you-go (selling instructor hours) rather than singular courses is beneficial to students."*

The results (slope of 0.4538 and R-squared of 0.2059) suggest a positive but weak linear relationship between the two variables examined in the model. While there is a positive trend, the model explains only a little over 20% of the variation in the dependent variable, indicating that other factors are likely at play. Detail of the analysis can be found in Annex B.

Respondents agree (3.09) with the concept where an instructor continues following a student after training ends and support future development. It currently happens in an organic matter, with local instructors following local students, but training agencies may assess methods to paid instructors in a more formal way. Deviation was medium (0.67) in this response which may be considered because of instructors picturing students as a holiday-type transactional business rather than a longer-term relationship. However, respondents indicated a strong support (3.35) to the long-term mentoring of the same student and believe it may result in more committed divers (SD 0.72).

The Author built a Scatter plot for the following antecedent and effect:

> *"It would be positive for an instructor to continue following a student after training ends and support future development." vs. "Long term mentoring of the same student may result in more committed divers. "*

The results, R (slope) of 0.6826 and R-squared of 0.4660, suggest a **moderately strong positive linear relationship** between the two variables examined in the model. A positive slope (0.6826) indicates a positive linear relationship. This means that as the value of one variable increases, the value of the other variable tends to increase as well.

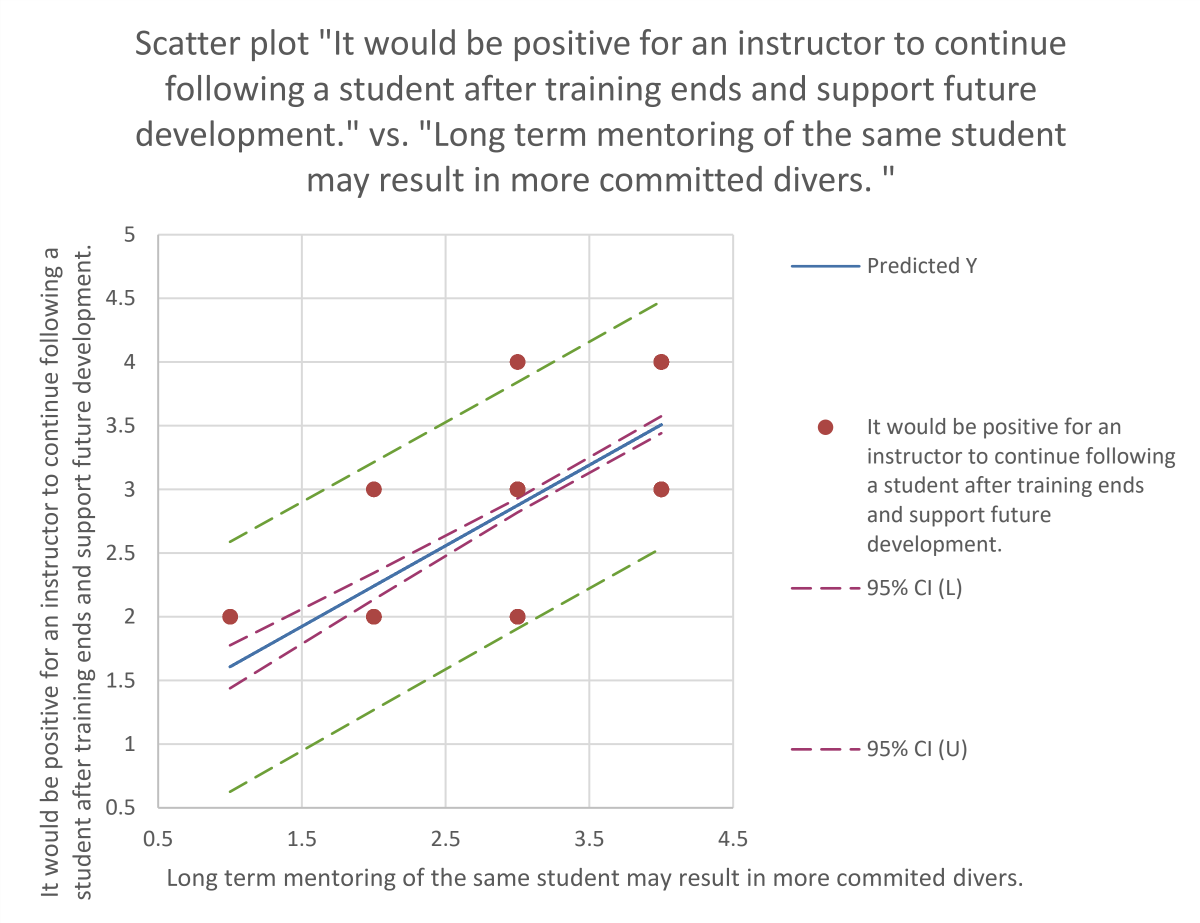

Figure 12: Following the Student vs Long Term Mentoring

An R-squared value of 0.4660 signifies that approximately 46.6% of the variation in the dependent variable is explained by the independent variable. In simpler terms, nearly half (around 47%) of the changes observed in the dependent variable can be attributed to the changes in the independent variable according to this model. This finding is worth exploring further.

In the same vein, a mean of 2.73 respondents believe that the diving industry limits quality due to the low price of training. STD DEV is at 1.07 indicating little difference in responses that can be interpreted as consensus. The obvious trigger would be an increase in regulation, whereby Government intervention would ensure higher standards. The survey means was neutral (2.36/4) with little standard deviation (1.18). Diving professionals may not be willing to sacrifice their freedom to big brother just yet or do not believe regulation will bring enough change.

Perhaps interviewees did not understand that government intervention brings around closures of the weaker elements in the diving business. This is also reflected in the responses to "There is too much competition in the industry resulting in a price/quality drop" with a means of 2.64, which edges on neutral bias with a firm STD DEV of 1.00. The strong community element in the diving industry may also be a factor. The matter becomes murkier when introducing regression.

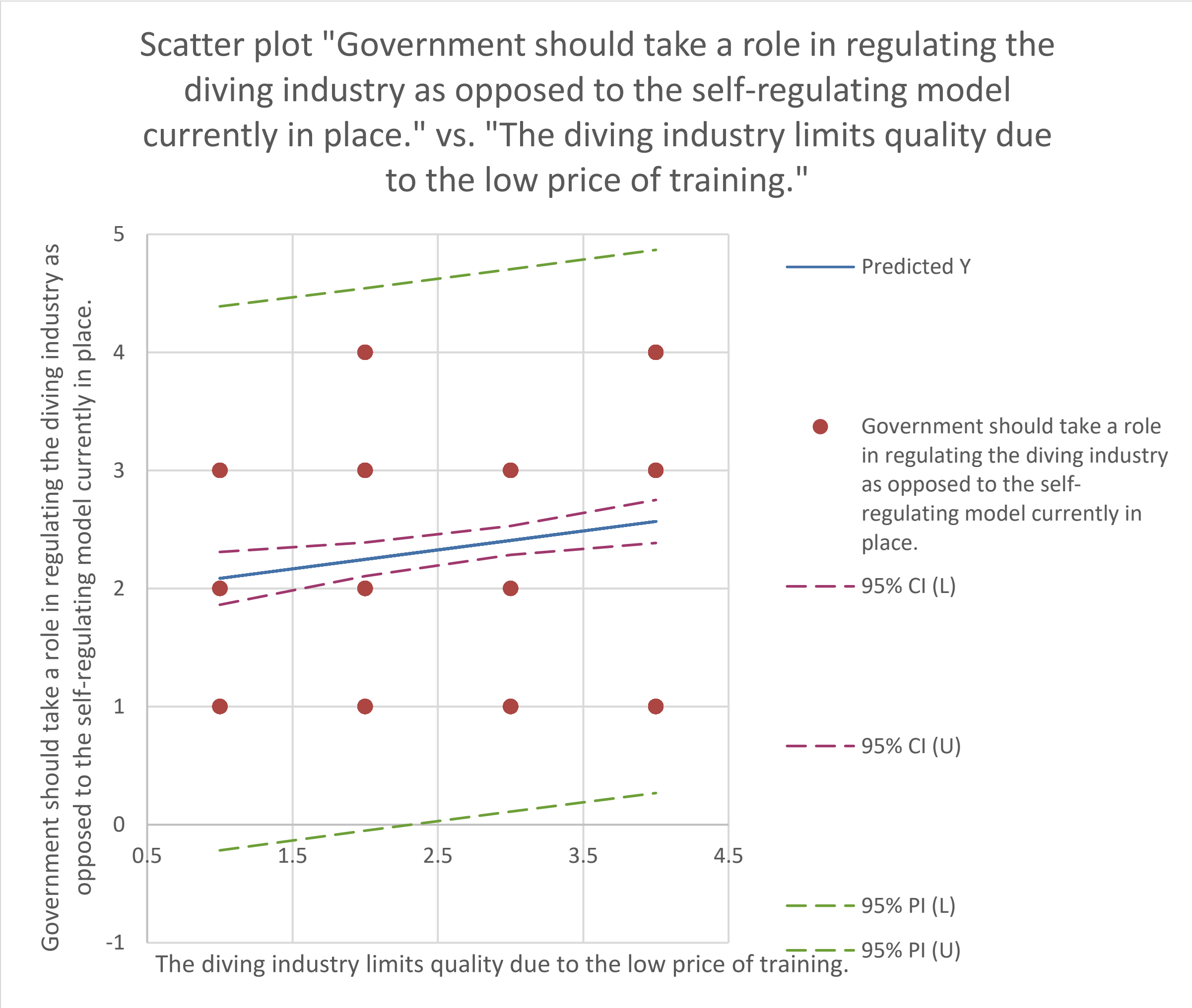

FIGURE 13: GOVERNMENT REGULATION VS INDUSTRY QUALITY

The results, R (slope) of 0.1467 and R-squared of 0.0215, indicate a very weak positive linear relationship between the two variables examined in the model. An R-squared value of 0.0215 signifies that only about 2.15% of the variation in the dependent variable is explained by the independent variable. The results suggest a very weak positive trend, that is practically negligible. The model explains almost none of the variation in the dependent variable. This means there's very little to no linear relationship between the two variables and that the theory is disproved in absence of other factors not included in the model that may having a much stronger impact on the dependent variable.

The perception that Diving Instructors are underpaid and the current economic model does not make financial sense for a full-time employment is resounding (3.40/4). This perception could eventually skew diving professional to treat instruction like a hobby. If this belief persists diving will turn into a niche sport rather than a mainstream business. The deviation (0.63) could relate to independent instructors, who seem to be the ones making something out of the sport. Using Regression brings R value (0.3541) and R-squared (0.1254). 0.3541 indicates a weak positive correlation. There might be a slight tendency for the two variables to increase or decrease together, but it's not a very strong connection. With an R-squared of 0.1254, only about 12.54% of the variation in one variable is explained by the other variable in this analysis.

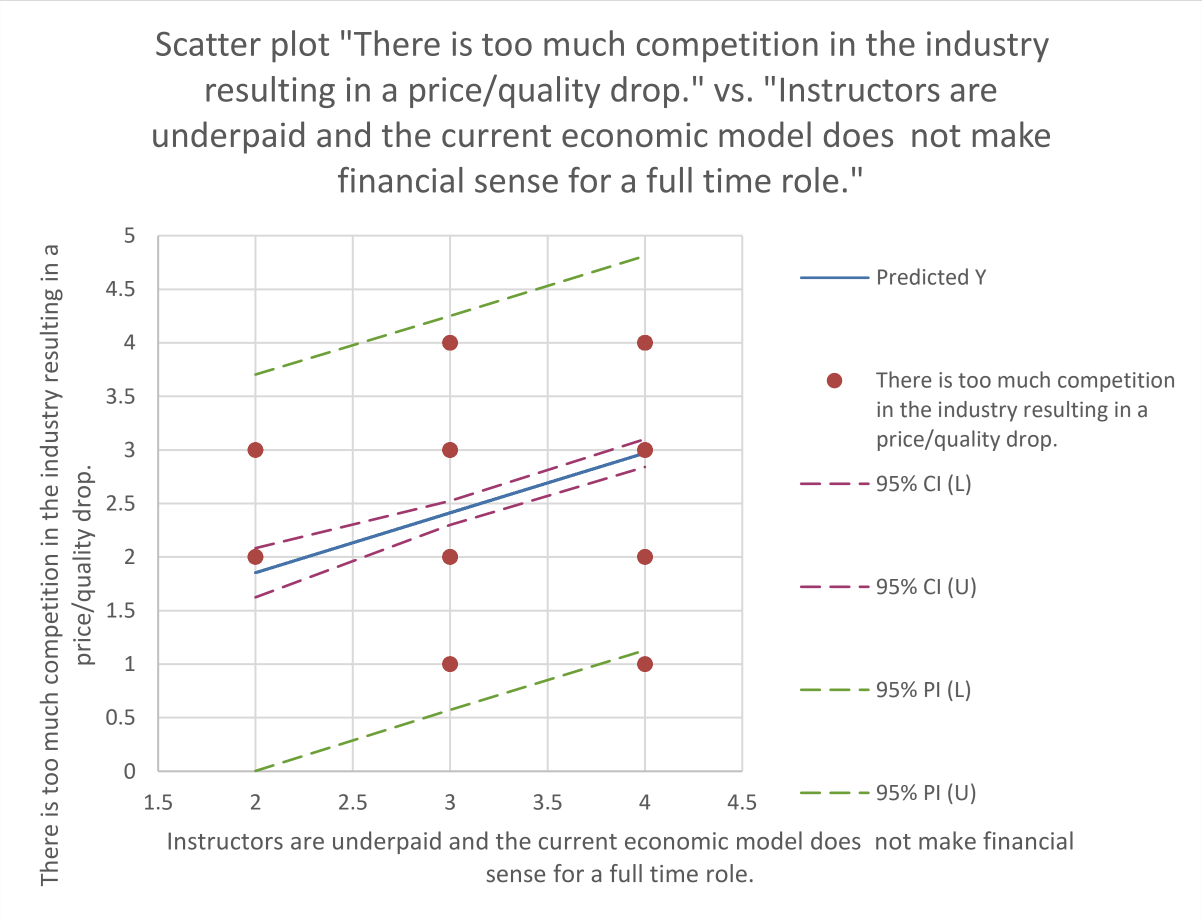

FIGURE 14: COMPETITION VS UNDERPAID INSTRUCTORS

The analysis examined the correlation between the level of competition in the industry and instructor pay. A weak positive correlation (R=0.3541) could suggest that as competition increases (statement 1), instructor pay might also slightly increase (not supporting statement 2). However, the low R-squared (0.1254) indicates many other factors likely influence instructor pay besides competition. An alternative analysis could have explored the relationship between instructor pay and the quality of service (or student outcomes). A weak positive correlation here wouldn't necessarily be meaningful. It might suggest that higher pay is associated with slightly better quality, but other factors likely play a bigger role and more research is needed to properly focus on the elements in question.

5.5 Promotion

The literature review argued the erosion of grass root divers, a well-documented problem which is driving scuba into an aging sport as well a more casual one. The instrument was developed considering the importance of Promotion and what tools could be deployed to reach out to new entrants to the diving world.

TABLE 9: 'PROMOTION' DESCRIPTIVE STATISTICS

4Ps	Antecedents	Mean	STD DEV. (P)	Expected Outcomes	Mean	STD DEV. (P)
Promotion	Volunteering opportunities would give young people a chance to give back to the diving community and learn about marine conservation.	3.13	0.77	Diving should be promoted as a sustainable activity. It promotes contact with nature, better mental health and new social relationships.	3.22	0.70
Promotion	Making diving more affordable for younger divers would boost the industry.	2.96	0.85	Diving should be offered as a sport in schools and youth organisations.	3.23	0.74
Promotion	More should be done to make diving more inclusive, helping individuals that need support to dive.	3.18	0.68	Making diving more accessible, through better infrastructure would increase take up.	3.12	0.69

Volunteering and conservation are commonly agreed upon method of giving back to the society (mean=3.13) with little deviation in the responses (STD DEV= 0.77). One outcome would be to focus on promoting diving as an activity that puts people in contact with nature, forms new social relationships and promotes better health – like camping is promoted, rather than the current 'hard core' water sports image being used to position diving. Respondents overwhelmingly agree with this (mean=3.22/4) with low deviation the replies (STD DEV=0.70). The results, R (correlation coefficient) of 0.3081 and R-squared (coefficient of determination) of 0.0949, indicate a weak positive linear relationship between the two variables examined in the model. There is a potential connection between these statements, even though they aren't measuring the same thing directly. In Scenario 1: Increased promotion of diving as a sustainable activity (statement 2) could lead to more opportunities for volunteering within the diving community (supporting statement 1). This is because a focus on sustainability might encourage organizations to involve volunteers in conservation efforts, reef cleanups, or educational programs for new divers. Scenario 2: Young people who participate in volunteering opportunities (statement 1) might become more aware of the importance of marine conservation and advocate for sustainable diving practices (supporting statement 2). Their firsthand experience could make them passionate about protecting the underwater environment.

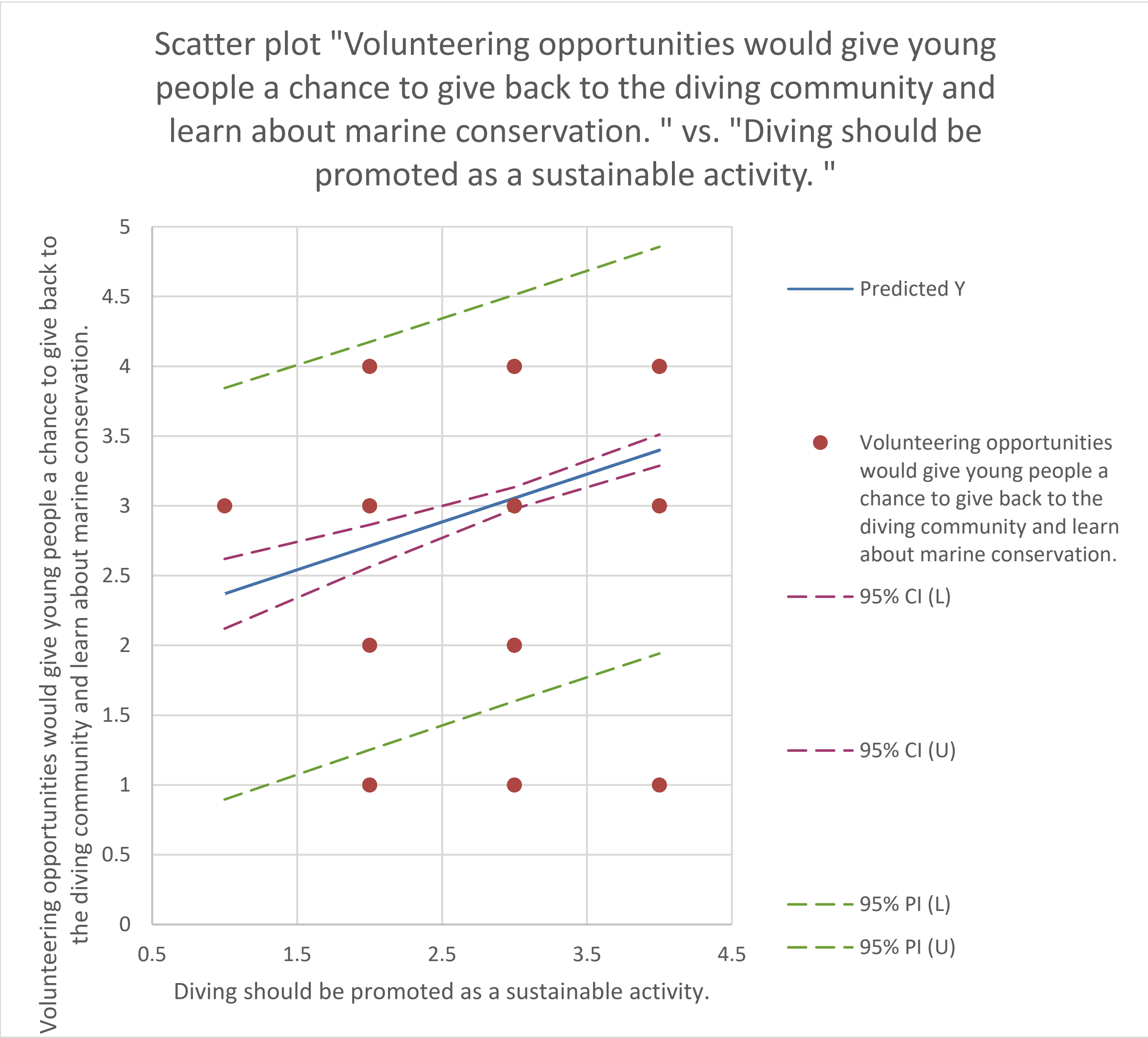

FIGURE 15: VOLUNTEERING VS PROMOTION OF DIVING

The statements are thematically linked, with both highlighting the importance of responsible diving practices. While the R and R-squared values do not directly connect these statements, they might indicate a weak positive correlation between other variables potentially related to promoting sustainable diving meriting future research.

Diving is a capital-intensive sport in a society that exists in a credit crunch. Youths struggle to afford their education and housing has become so much of an issue that we are on the verge of a cash (Forbes, 2023). With these kinds of pressures in play, one sees why many of the respondents (2.96) consensually agree (0.85) that diving needs to become affordable for younger divers. The outcome probed in the survey – that of introducing diving at school level - was strongly supported by the respondents (3.23) with little deviation (0.74).

By addressing multiple factors like affordability, program accessibility, and safety concerns, a more comprehensive approach can be developed to encourage youth participation in diving.

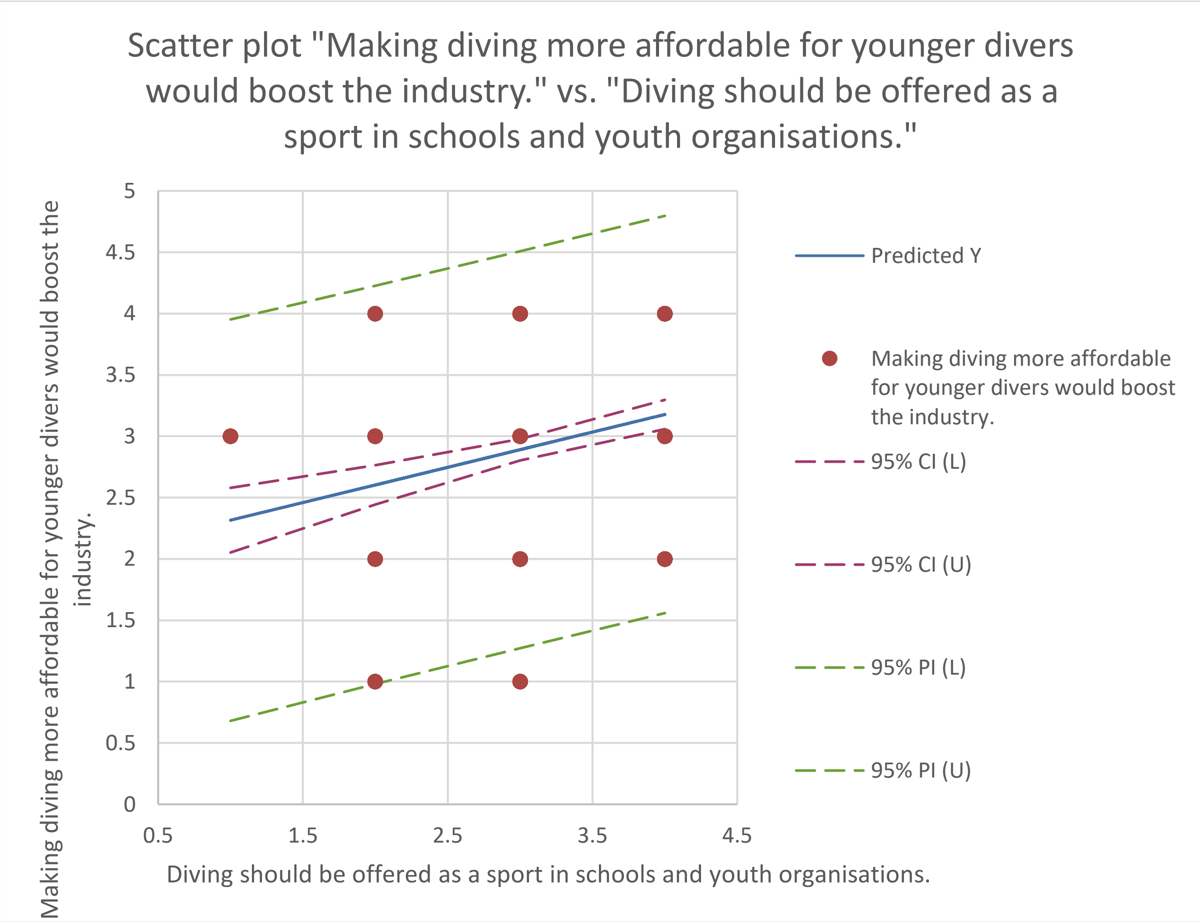

FIGURE 16: MAKE DIVING AFFORDABLE VS YOUTH ORGANISATIONS

The two statements discuss ways to increase participation in diving, but they target different aspects. Statement (1) focuses on the cost barrier. It suggests that reducing the cost of diving lessons, equipment, or certification fees could make diving more accessible to young people, leading to a larger pool of potential divers and a boost for the diving industry. Statement 2: proposes that diving should be offered as a sport in schools and youth organisations resulted in a regression result of R 0.2515 and R-Squared 0.0632." This statement highlights accessibility through education. It suggests incorporating diving programs into schools or youth organisations could introduce young people to diving at a younger age, potentially leading to more divers in the long run. The results of a regression analysis are also mentioned, with an R-value of 0.2515 and R-squared of 0. 0632.The R-squared value of 0.0632 in the regression analysis for statement (2) is very low. This suggests that offering diving in schools/youth organizations explains only about 6.32% of the variation in whatever the dependent variable was. There could be other factors that more significantly influence youth participation in diving. While both statements target youth participation in diving, they address different barriers. The low R-squared value from the analysis suggests limited explanatory power for school diving programs on its own. It is likely a combination of factors that influences youth participation, and both affordability (statement 1) and educational programs (statement 2) could be pieces of the puzzle. Future research could consider:

a. Cost vs. Program Availability were making diving affordable might not be enough if there aren't accessible programs nearby.
b. Long-Term Commitment: Diving requires ongoing investment in equipment and training. Affordability needs to be considered throughout the diving journey, not just for initial certification.
c. Safety and Risk Perception: Safety concerns or the perception of risk might be a bigger hurdle for some young people than cost or program availability.

Inclusivity (or lack of) also features as an antecedent to lower participation (3.18) although higher degrees of deviation (0.68) may indicate that respondents do not know how to go about it. The outcome proposed – that of better infrastructure was widely supported (3.12/4) indicating a global call out for public authorities to focus on the matter with a degree of deviation in the replies (0.69) that is comparable to the former problem – how to go about it?

The two statements address different aspects of increasing diving accessibility, and the provided Pearson R (0.0299) and R-squared (0.0009) indicate an extremely weak, near-zero correlation.

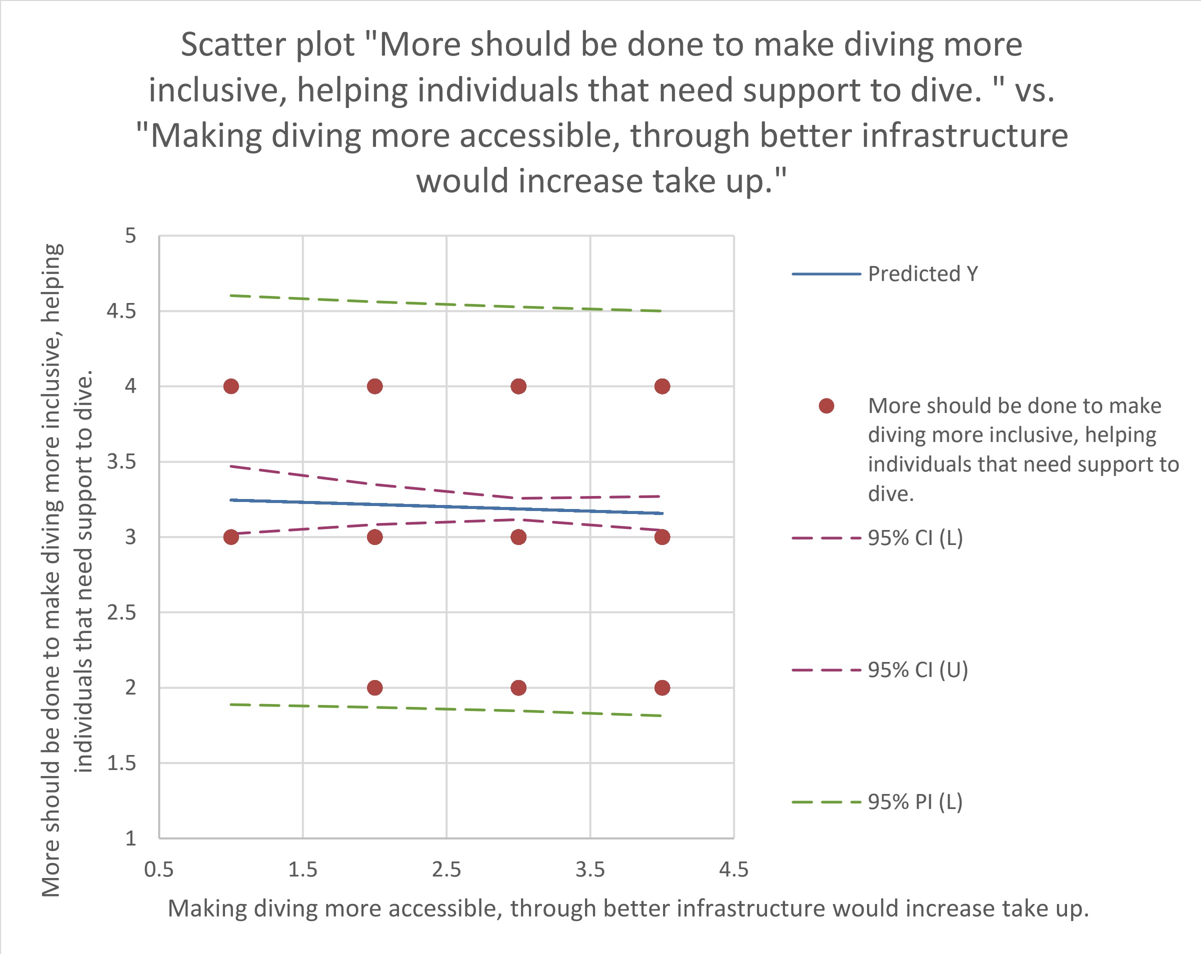

FIGURE 17: INCLUSIVE DIVING VS BETTER INFRASTRUCTURE

There are several reasons why the correlation might be so weak: Improved infrastructure (statement 2) might not directly address the needs of people who require additional support for diving (statement 1). Respondents could have felt that they target different aspects of accessibility. Further more the Inclusivity goes beyond physical accessibility. It might encompass factors like training for instructors to work with divers with disabilities, offering financial assistance for adaptive equipment, or building a more welcoming diving community. This matter was extensively discussed in the Literature review and documented evidence of the need for a more welcoming, less tough Diving Community points toward this direction.

These statements highlight two important aspects of making diving more accessible, but they are relatively independent. The very low R-squared value suggests that improving physical infrastructure alone is unlikely to have a significant impact on increasing participation among those who need additional support. Finally, for a more comprehensive approach to increasing diving accessibility, a multi-pronged strategy that considers both physical infrastructure (statement 2) and specific needs-based support (statement 1) would likely be more effective.

6. Conclusions

For the purposes of flow and summarisation, the conclusions are being split into the 4Ps:

6.1 Product

The theory proposed for changing the product has traction. Most of the respondents believe the hours trained for in their last course was too little. One wonders what the rest of the much larger cohort of recreational divers feel. Skill-by-skill certification indicated a weak positive correlation indicating other factors come to mind which not necessarily require micro learning concepts (Leong et al., 2020) to be introduced to the business of diving training. Professionals seem accustomed the pyramid scheme. Even if the eLearning modules are at times repetitive there does not seem to be the driving force to change it in the professional community. It does stand to be seen how the introduction of ISO standards[51], and the increasingly active price war effects this mindset in the coming years.

Will the current diving training materials and courses turn into something obsolete? Will they be wiped out by common frameworks that are freely available on the web? Will diving become no different to mainstream education?

That's what happened to printed books with the advent of e-Readers, who are now beginning to be phased by Blinkist and other subscription-based services (Falvey, 2019) in the same way that cinema is being challenged by streaming services[52]. The survey may not have hit the mark as expected, but in this case the audience may have been the wrong one: a cohort of middle-aged to elder diving professionals may be reasoning out '*if it isn't broke don't fix it*'.

6.2 Place

The theory presented here is that the place of diving has moved away from being the Training Agency to the quality of the instructor and the materials used. Respondents overwhelmingly indicated (means=3.47) that they believe the instructor to be centric to the industry and support efforts to raise the quality of the instructor. That said, weak correlations with the use of alternative materials and sources failed to prove that respondents freely move from one agency

51 https://idssc.org/iso-en-standards/

52 https://blog.bham.ac.uk/business-school/2019/02/20/death-of-cinema/

to another. There may be a link between the two but further research is required to understand what students think of it. In hind side there may be a bias in the responses given that the sample population of this stand to gain from an increase in focus. It does not on the other hand detract from the fact that brand affinity and the ‘place of diving’ is decreasing and alternative mediums (YouTube, other training agency materials) are being used for education defeating any argument of training agency citizenship beliefs. The result should resonate a wakeup call for the training agencies: the future relevance of selling near identical courses will be eroded through the availability of free, quality material produced or published by other sources[53]. Training flexibility needs to be lined up with a higher degree of minimum standards. As ISO comes in the only differentiator amongst agencies will be the quality of the material and quality of instruction as delivered on premises.

If the ‘place’ in dive training is ‘the instructor’, one wonders why training agencies do not do more to retain an instructor from crossing over to another agency. This social statistic also spells an urgent call for training agencies to revisit the dive centre certification model.

In line ISO, looming national or regional regulation will bring a sudden and unapologetic death to the revenue stream of ‘PADI 5-Star’ Centres. Independent professionals will find an issue with a small plaque on the wall saying ‘Dive Centre authorised in line with Legal Notice XX of 2024, Malta Diving Authority’. Instructors clearly believe a dive centre is no more than a filling station and logistical base. Further testing is required to understand if respondents also feel no citizenship with dive centres, contributing to the notion that a dive centre is very much a location and not much more. Future studies could attempt to assess students and understand if for example, a student would follow a diving instructor to another location in a bid to validate any elements of bias in this theory. PADI is clearly going in the opposite direction[54].

6.3 Price

The professional community indicated a predisposition to a pay-as-you-go and diving-as-a-service model of business like the telecoms industry (Werthschulte, 2023). These two concepts could support the notion of converting more new divers as well as ensuring new divers continue have a longer mean lifetime value (MLV) to the industry. Coupling this concept with long-term mentorship could lead to the dive training business morphing into a ‘stickier’ model. The

53 https://www.social-diving.com/diving/best-scuba-training-agencies/

54 https://divemagazine.com/scuba-diving-news/padi-bans-multi-agency-middle-east-and-egypt-dive-centres

more pulling power the training business develops, the easier it becomes to verticalise and horizontalise the offering, resulting in a simpler sale, less dependent on the instructor's charisma and focus more on accessibility of instruction.

Football is accessible to the poorest children whilst business strategists found ways to turn the sport in one of the most lucrative industries in the world. Diving could take some queues from football by understanding how the sport was socialised across the poorest regions of the world.

Descriptive statistics used in this thesis qualify the issue with the current pricing model. Professionals feel the industry limits quality due to low price (means=2.73), there is too much competition (means=2.64) and that instructors are underpaid will the professional not making financial sense (means=3.40). The market is squeezing out committed, full-time instructors in a bid for cheap labour. In behavioural finance models, short-run realised profits and trend-following strategies destabilise markets (Hens, T. and Schenk-Hoppé, 2009). If quality issues keep on emerging in diving, it will be no surprise that Governments end up regulating the industry. The self-regulating model currently in place has served the agencies well, and most dive professionals seem neutral to the idea (2.36) – indicating a level of cluelessness on how regulation could improve their pay grade.

Training Agencies need to actively find ways to future proof revenue by shifting to pay-as-you-go models and finding ways for instructors to continue following students, thus increasing Lifetime Value.

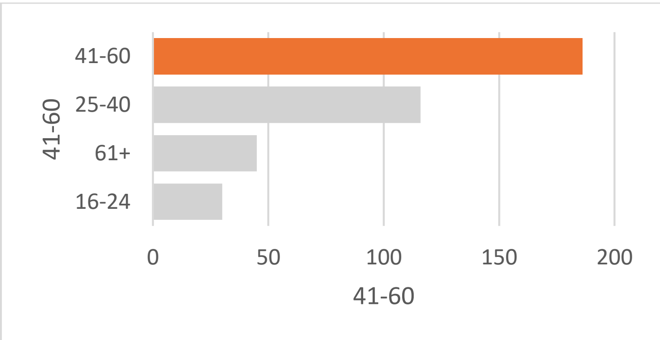

FIGURE 18: DIVING PROFESSIONALS BY AGE

The current, low margin model may also be a factor behind the aging professional community. The sample clearly indicates that 61% of the respondents are past retirement age or in the last leg of their working life. Younger generations may opt for more lucrative professions, going for part time involvement in the diving industry (Keiran, 2023). If the erosion continues, self-employed, micro dive centres will continue to pop up invariably degrading the quality economies of scale brings with it. Government intervention and regulation may future proof this situation, by directly creating barriers to entry effectively blocking dive centre mushrooming. More profitable larger dive centres should consider instructor-led models of business promotion shifting away from the low cost, touristic models. The statistics prove (R of 0.6826 and R-squared of 0.4660) a moderately strong positive linear relationship between thinking long term on the pricing model: long term student mentoring will result in more committed divers.

6.4 Promotion

The professional diving community consensually agrees (means=3.22) about benefits of diving as a sustainable activity that helps in both health and social aspects. Minimal deviation throughout the series of questions unequivocally defines agreement with the promotional statements proposed: accessibility, support, young people, communities, affordable and in school curriculum. The current model being used by the training agencies - pretty, smiling women in celeste waters could take heed of the importance of sustainability. The element of mental health (St Leger Dowse et al, 2019) through the contact with nature (Carreño et al, 2020) may be an opportunity to attract new cohorts to the business as well as give something back to society. The common ground about creating social relationships seems to lead with the increasingly relevant theory about communities[55]. This is perhaps where social networks, could be taken to the next level though through the development of a global match making platform that would link divers with common interests, levels of training, across nations. Match making would foster new social relationships and a ‘Tinder’ of diving may quickly bring individuals at the periphery of the sport into a much more committed state of mind[56].

There is also consensus (means=3.12) that accessibility needs to improve, and yet even destinations like Malta take too long to execute their own plans[57], let alone cater for disabled divers or increased accessibility. This level of commitment will never be profitable and requires significant investment (e.g. introduction of vessels capable of transporting wheelchair-bound individuals). The only way it can happen is through non-for-profit foundations or public funding, but first mover operators are sure to benefit of the extensive contribution given back

55 https://dipndive.com/blogs/stories/landbound-how-to-stay-involved-with-the-diving-community

56 https://www.divenewswire.com/how-to-play-dive-trip-matchmaker/

57 https://timesofmalta.com/article/diving-action.1050733

to society (Santiago et al, 2023) . The gravitational effect of a good deed is sure to attract new community members that will eventually result in commerce.

Finally, there is the most pressing issue – the lack of uptake by youths. Instructors know this as a fact, but even the sample collected clearly indicates aging demographics. Nothing restricts diving to be another curriculum sports subject at senior school level[58]. Indeed, as some schools offer tennis or sailing, diving can easily be integrated. This is particularly relevant to schools with access to the sea and pools. The move would require some first mover schools and school management that is ready to step out of the comfort zones as well as instructors that can offer quality education backed with extensive paediatric expertise to be able to counter arguments of risk. Creative methods of attracting youths is after all, the most relevant point to the business of diving and the only one which defines its long term sustainability.

58 https://www.edweek.org/teaching-learning/opinion-scuba-at-high-school-diving-into-outdoor-education/2018/07

7. Implications for further research

This study started off as an experimental assessment of the business model, spear headed through field gathered anecdotes. Dive centres in the Authors locality and independent complain of little undergrowth. The grassroot training basic ‘open water and advanced’ training guarantees new divers and a future to the industry, yet it is being eroded in a time when the sale of ‘other’ water sports equipment is on the increase. Professionals complain of the diving training agencies’ lack of response to the problem. In a bid to replace revenue training agencies push instructors to ‘level up’ and non-instructors to turn professional. It is obviously a short-term strategy. Training agencies only see instructors as ‘other’ clients (Keiran, 2021), with no other interest then selling more courses. Other responses by the training agencies included the expansion of the training catalogue pushing ‘specialisations’ into micro-learning modules.

Future research would study a radical shift in the current model. GUE has attempted this with GUE TV[59] and cult like following. Smaller training agencies attempt different strategies – Interspace Explorers by way of example promote highly rigid DIR diving beyond GUE’s standard. TDI has opted to focus on independent instructors promoting its best looking ones on social media. That said, this is just scratching the surface when it comes to reinventing the model. Parts of the 4P are more costly and difficult to implement than others. Shift away for the traditional cash-cow pyramid model and focus on a model shift that places quality of education in the centre will require extensive testing of the current instructor base and their commitment.

Future research would test entry level courses with a subscription basis, piloting skill-based assessment on a select cohort of highly committed instructors. Unfortunately, the rigid, copy-paste approach adopted by the leading training agencies, stifles the much-needed change which cannot happening without several training agencies becoming irrelevant and fizzling out in the coming years.

Making diving pay would be the next area of research. The aging community of professionals indicates no uptake, and the audit-less environment promotes less quality. An innovative subscription-based service should feature in future research, in no different way that Netflix,

59 https://gue.tv/catalog

Amazon, Spotify and many others have done. The research should test different price points and explore financial models for both the training agencies as well as candidate dive instructors.

There is an urgent requirement to understand where and how to treat the perceived lack of quality. Would regulatory measures be helpful? Should Governments, the European Community close onto the sloppy players in the diving community? Or would it be better to leave sleeping dogs lie, and have the industry self-regulate itself? Regulation would shunt the weaker dive centres and weed out unfit instructors, severely dropping revenue for training agencies who rely on volume not quality. Training agencies would lose out at the benefit of the end consumer. Stronger dive centres would flourish through consolidation.

Would the consumer be ready to pay more to get premium? With a lot less fragmentation, would the new premium dive centres be able to pay instructors more and sell equipment profitably? Wouldn't the market be directed to stronger more profitable players as is the case in the hospitality business (e.g. Hilton, Marriot, Radisson). On the same ground, what is stopping dive centres, to establish global franchises where standardisation allows the quality and savings to be passed to the consumer?

A study to identify finance products that alleviate initial outlay needed to start diving would be important to support new divers but would require testing of local financial institutions. A first mover destination in the diving world - like Malta - could easily stage itself as the world's platform by offering a better financial model. The model could include the development of a diving bank – whereby a regulated entity would provide credit facilities to divers, understanding the product much better than anyone else, in the same way that DAN provides a global insurance through a Malta-based licence[60].

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60 IDA Insurance Limited is a subsidiary of DAN Europe Group. IDA Insurance Limited is authorised to carry on business of insurance in terms of the Insurance Business Act 1998, regulated by the Malta Financial Services Authority. Company Registration Number: C 36602 | Value Added Tax Registration Number: MT1968-5634

8. Acknowledgments

If you’ve got this far you would have understood how difficult it is to build descriptive statistics when no quantitative research is available. The thesis took three years to be designed and developed. My son Mikiel, a young diver himself, was the reason for turning into a dive professional. My wife Iryna patient as ever, listens to my diving rambles through an ever-supporting smile.

I am indebted to my tutor Simon Caruana who supported the idea of developing a novel angle to diving academics, that is the application of management science to the business of diving training.

Special thanks to Daniel Xerri, who helped me tweak the research instrument.

I am still profoundly grateful to Emanuel Said who - some years ago - instilled the drive to use statistics to qualify statements.

Finally, I am thankful to ATLAM Sub Aqua Club (Malta) for bringing together a great group of diving buddies, who indirectly pushed me to go beyond diving as a hobby to an all-out academic and professional interest.

End

Annex 1: Questionnaire

Title

A quantitative assessment of the current business offering and emerging need of change.

Institute of Tourism Studies (Malta)

Demographics section

1. Relationship with the diving industry
    a. On my way to become a dive professional
    b. Divemaster
    c. Diving Instructor
    d. Technical Diving Instructor
    e. Related professional, not instructing.

2. Total number of dives
    a. 0-50
    b. 51-200
    c. 201-1000
    d. 1000+

3. Age Group
    a. 16-24
    b. 25-40
    c. 41-60
    d. 61+

4. Location (Country)?
    a. [Free text]

Likert Type section ranging from:

- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

The following questions deal with how you perceive dive training.

5. I got enough hours of training in my last diving course to consider myself ‘confident’ in the skill.
6. eLearning modules are at times repetitive.

7. I refer to diving materials on YouTube, Google as well as other training agencies.
8. The diving industry should focus more on the quality of its instructors.
9. Skill-by-skill certification as opposed to course-by-course would result in better divers.

This section deals with the pricing of the dive training business.

10. The cost of course-by-course eLearning materials should be replaced with an ongoing subscription that gives immediate access to all materials introduced.
11. It would be positive for an instructor to continue following a student after training ends and support future development.
12. Long term mentoring of the same student may result in more committed divers.
13. Creating a pay-as-you-go (selling instructor hours) rather than singular courses is beneficial to students.

The next set of questions consider dive centres, instructors and training agencies.

14. Government should take a role in regulating the diving industry as opposed to the self-regulating model currently in place.
15. The diving industry limits quality due to the low price of training.
16. There is too much competition in the industry resulting in a price/quality drop.
17. Instructors are underpaid and the current economic model does not make financial sense for a full-time employment.

The next questions consider the diver population.

18. The social part of diving is largely unexplored and can support the growth of the industry.
19. Volunteering opportunities would give young people a chance to give back to the diving community and learn about marine conservation.
20. Making diving more affordable for younger divers would boost the industry.
21. Making diving more accessible, through better infrastructure would increase take up.
22. Diving should be offered as a sport in schools and youth organisations.
23. Diving should be promoted as a sustainable activity.
24. Diving promotes contact with nature, better mental health and new social relationships.
25. More should be done to make diving more inclusive, helping individuals that need support to dive.

Annex B: Descriptive Statistics - Detail

What is your relationship with the diving industry?	I got enough hours of training in my last diving course to consider myself 'confident' in the skill.	eLearning modules are at times repetitive.	I refer to diving materials on YouTube, Google as well as other training agencies.	The diving industry should focus more on the quality of its instructors.	Skill-by-skill certification as opposed to course-by-course would result in better divers.	The cost of course-by-course eLearning materials should be replaced with an ongoing subscription that gives	It would be positive for an instructor to continue following a student after training ends and support future developme	Long term mentoring of the same student may result in more commited divers.	Creating a pay-as-you-go (selling instructor hours) rather than singular courses is beneficial to students.
MEAN	2.94	2.67	2.81	3.47	2.70	2.55	3.09	3.35	2.93
MEDIAN	3	3	3	4	3	2	3	3	3
STD DEV (P)	0.81	0.74	1.01	0.61	1.04	0.96	0.67	0.72	0.97
ZTEST									

What is your relationship with the diving industry?	Government should take a role in regulating the diving industry as opposed to the self-regulating model currently i	The diving industry limits quality due to the low price of training.	There is too much competition in the industry resulting in a price/quality drop.	Instructors are underpaid and the current economic model does not make financial sense for a full time	The social part of diving is largely unexplored and can support the growth of the industry.	Volunteering opportunities would give young people a chance to give back to the diving community and learn about	Making diving more affordable for younger divers would boost the industry.	Making diving more accessible, through better infrastructure would increase take up.	Diving should be offered as a sport in schools and youth organisations.	Diving should be promoted as a sustainable activity.	Diving promotes contact with nature, better mental health and new social relationships.	More should be done to make diving more inclusive, helping individuals that need support to dive.
MEAN	2.36	2.73	2.64	3.40	2.87	3.13	2.96	3.12	3.23	3.22	3.60	3.18
MEDIAN	2	3	2	3	3	3	3	3	3	3	4	3
STD DEV (P)	1.18	1.07	1.00	0.63	0.79	0.77	0.85	0.69	0.74	0.70	0.53	0.68
ZTEST												

Linear Regression

Dependent variable	The cost of course-by-course eLearning materials sh
Independent variables	Creating a pay-as-you-go (selling instructor hours) rather than singular courses is beneficial to st
N	379

Regression Statistics

R	0.4538	***R-Squared***	**0.2059**	*Adjusted R-Squared*	0.2038
MSE	0.7323	***S***	**0.8557**	*MAPE*	35.3040
Durbin-Watson (DW)	1.9095	*Log likelihood*	-477.7206		
Akaike inf. criterion (AIC)	2.5315	*AICc*	2.5315		
Schwarz criterion (BIC)	2.5523	*Hannan-Quinn criterion (H*	2.5398		
PRESS	278.6996	*PRESS RMSE*	0.8575	*Predicted R-Squared*	0.1983

The cost of course-by-course eLearning materials should be replaced with an ongoing subscription that gives immediate access to all materials introduced. = 1.2492 + 0.4460 * Creating a pay-as-you-go (selling instructor hours) rather than singular courses is beneficial to students.

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1.	71.5828	71.5828	97.7573	0.0000
Residual	377.	276.0583	0.7323		
Total	378.	347.6412			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	1.2492	0.1391	0.9756	1.5227	8.9798	0.0000	*Rejected*			
Creating a pay-as-you-go (selling instructor hours) rather than singular courses is beneficial to students.	0.4460	0.0451	0.3573	0.5346	9.8872	0.0000	*Rejected*	1.0000	1.0000	0.4538
T (5%)	1.9663									

Linear Regression

Dependent variable	I refer to diving materials on YouTube, Google as well
Independent variables	The diving industry should focus more on the quality of its instructors.
N	378

Regression Statistics

R	0.3762	***R-Squared***	**0.1415**	*Adjusted R-Squared*	0.1392
MSE	0.8788	***S***	**0.9375**	*MAPE*	41.8734
Durbin-Watson (DW)	1.5532	*Log likelihood*	-510.9441		
Akaike inf. criterion (AIC)	2.7140	*AICc*	2.7140		
Schwarz criterion (BIC)	2.7348	*Hannan-Quinn criterion (H*	2.7223		
PRESS	333.9707	*PRESS RMSE*	0.9400	*Predicted R-Squared*	0.1323

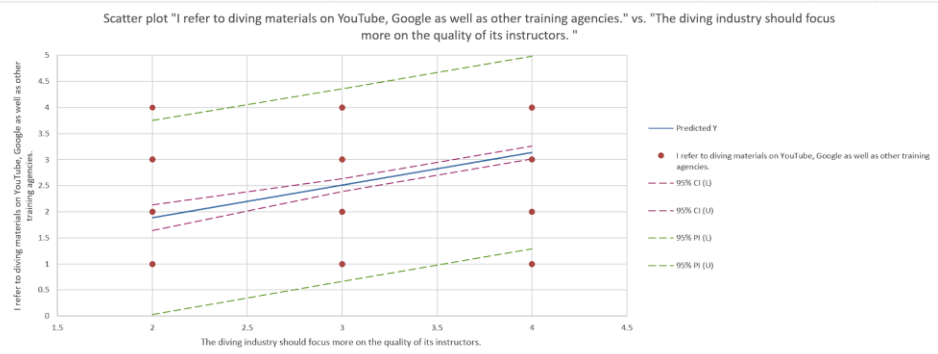
I refer to diving materials on YouTube, Google as well as other training agencies. = 0.6434 + 0.6233 * The diving industry should focus more on the quality of its instructors.

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1.	54.4622	54.4622	61.9713	0.0000
Residual	376.	330.4399	0.8788		
Total	377.	384.9021			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	0.6434	0.2790	0.0948	1.1921	2.3060	0.0217	*Rejected*			
The diving industry should focus more on the quality of its instructors.	0.6233	0.0792	0.4676	0.7790	7.8722	0.0000	*Rejected*	1.0000	1.0000	0.3762
T (5%)	1.9663									

LCL - Lower limit of the 95% confidence interval
UCL - Upper limit of the 95% confidence interval



CI - 95% Confidence Interval
PI - 95% Prediction Interval

Linear Regression

Dependent variable	I got enough hours of training in my last diving cours
Independent variables	Skill-by-skill certification as opposed to course-by-course would result in better divers.
N	379

Regression Statistics

R	0.4447	***R-Squared***	**0.1977**	*Adjusted R-Squared*	0.1956
MSE	0.5293	***S***	**0.7275**	*MAPE*	26.5931
Durbin-Watson (DW)	1.6925	*Log likelihood*	-416.2120		
Akaike inf. criterion (AIC)	2.2069	*AICc*	2.2070		
Schwarz criterion (BIC)	2.2277	*Hannan-Quinn criterion (H*	2.2152		
PRESS	202.0068	*PRESS RMSE*	0.7301	*Predicted R-Squared*	0.1878

I got enough hours of training in my last diving course to consider myself 'confident' in the skill. = 3.8753 - 0.3451 * Skill-by-skill certification as opposed to course-by-course would result in better divers.

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1.	49.1802	49.1802	92.9171	0.0000
Residual	377.	199.5427	0.5293		
Total	378.	248.7230			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	3.8753	0.1038	3.6712	4.0794	37.3379	0.0000	*Rejected*			
Skill-by-skill certification as opposed to course-by-course would result in better divers.	-0.3451	0.0358	-0.4155	-0.2747	-9.6394	0.0000	*Rejected*	1.0000	1.0000	-0.4447
T (5%)	1.9663									

LCL - Lower limit of the 95% confidence interval
UCL - Upper limit of the 95% confidence interval

CI - 95% Confidence Interval
PI - 95% Prediction Interval

Regression Statistics

R	0.5206	***R-Squared***	**0.2711**	*Adjusted R-Squared*	0.2691
MSE	0.7265	***S***	**0.8524**	*MAPE*	34.5154
Durbin-Watson (DW)	1.7312	*Log likelihood*	-476.2353		
Akaike inf. criterion (AIC)	2.5237	*AICc*	2.5237		
Schwarz criterion (BIC)	2.5444	*Hannan-Quinn criterion (H*	2.5319		
PRESS	276.9542	*PRESS RMSE*	0.8548	*Predicted R-Squared*	0.2629

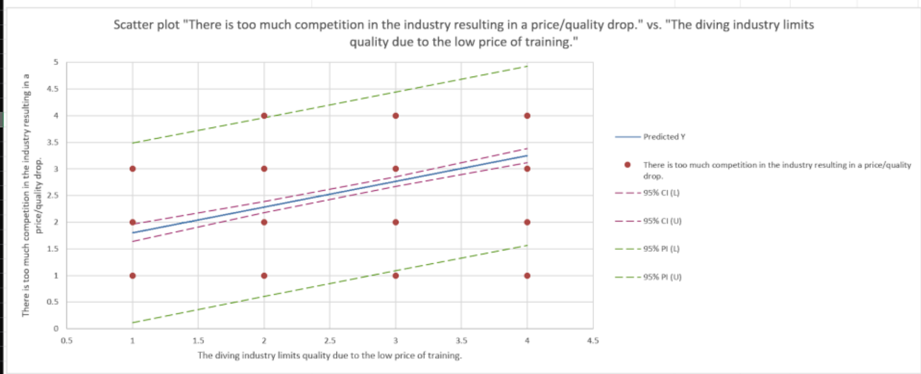
There is too much competition in the industry resulting in a price/quality drop. = 1.3168 + 0.4830 * The diving industry limits quality due to the low price of training.

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1.	101.8489	101.8489	140.1847	0.0000
Residual	377.	273.9031	0.7265		
Total	378.	375.7520			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	1.3168	0.1197	1.0815	1.5522	11.0009	0.0000	*Rejected*			
The diving industry limits quality due to the low price of training.	0.4830	0.0408	0.4028	0.5632	11.8400	0.0000	*Rejected*	1.0000	1.0000	0.5206
T (5%)	1.9663									

LCL - Lower limit of the 95% confidence interval
UCL - Upper limit of the 95% confidence interval



CI - 95% Confidence Interval
PI - 95% Prediction Interval

Linear Regression

Dependent variable	There is too much competition in the industry resulti
Independent variables	Instructors are underpaid and the current economic model does not make financial sense for a f
N	379

Regression Statistics

R	0.3541	***R-Squared***	**0.1254**	*Adjusted R-Squared*	0.1230
MSE	0.8718	***S***	**0.9337**	*MAPE*	40.3678
Durbin-Watson (DW)	1.4876	*Log likelihood*	-510.7661		
Akaike inf. criterion (AIC)	2.7059	*AICc*	2.7059		
Schwarz criterion (BIC)	2.7267	*Hannan-Quinn criterion (I*	2.7141		
PRESS	331.8770	*PRESS RMSE*	0.9358	*Predicted R-Squared*	0.1168

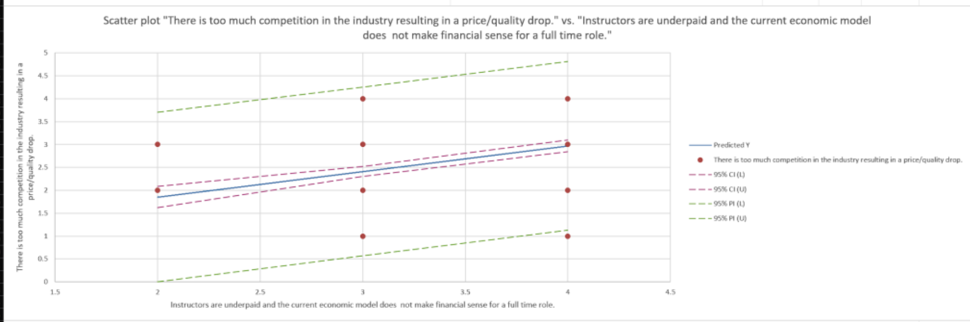
There is too much competition in the industry resulting in a price/quality drop. = 0.7366 + 0.5584 * Instructors are underpaid and the current economic model does not make financial sense for a full time role.

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1.	47.1015	47.1015	54.0308	1.2367E-12
Residual	377.	328.6505	0.8718		
Total	378.	375.7520			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	0.7366	0.2628	0.2199	1.2533	2.8030	0.0053	*Rejected*			
Instructors are underpaid and the current economic model does not make financial sense for a full time role.	0.5584	0.0760	0.4091	0.7078	7.3506	1.2367E-12	*Rejected*	1.0000	1.0000	0.3541
T (5%)	1.9663									

LCL - Lower limit of the 95% confidence interval
UCL - Upper limit of the 95% confidence interval



CI - 95% Confidence Interval
PI - 95% Prediction Interval

Linear Regression

Dependent variable	Volunteering opportunities would give young people a
Independent variables	Diving should be promoted as a sustainable activity.
N	379

Regression Statistics

R	0.3081	***R-Squared***	**0.0949**	*Adjusted R-Squared*	0.0925
MSE	0.5459	***S***	**0.7389**	*MAPE*	24.5679
Durbin-Watson (DW)	2.0198	*Log likelihood*	-422.0783		
Akaike inf. criterion (AIC)	2.2379	*AICc*	2.2379		
Schwarz criterion (BIC)	2.2587	*Hannan-Quinn criterion (I*	2.2461		
PRESS	208.3430	*PRESS RMSE*	0.7414	*Predicted R-Squared*	0.0838

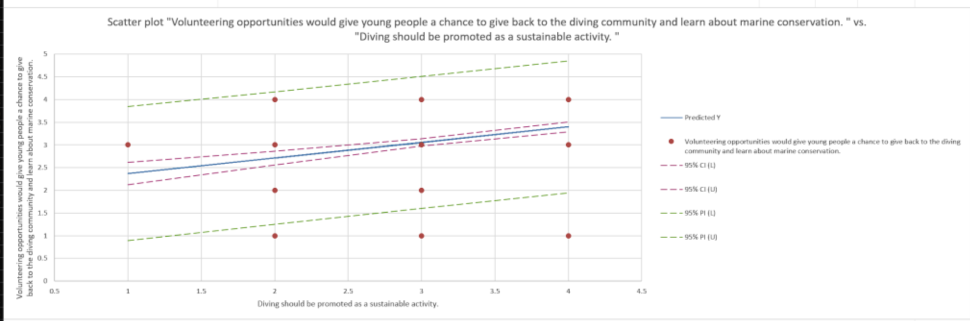
Volunteering opportunities would give young people a chance to give back to the diving community and learn about marine conservation. = 2.0266 + 0.3431 * Diving should be promoted as a sustainable activity.

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1.	21.5871	21.5871	39.5417	8.8958E-10
Residual	377.	205.8166	0.5459		
Total	378.	227.4037			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	2.0266	0.1798	1.6730	2.3802	11.2695	0.0000	*Rejected*			
Diving should be promoted as a sustainable activity.	0.3431	0.0546	0.2358	0.4504	6.2882	8.8958E-10	*Rejected*	1.0000	1.0000	0.3081
T (5%)	1.9663									

LCL - Lower limit of the 95% confidence interval
UCL - Upper limit of the 95% confidence interval



CI - 95% Confidence Interval
PI - 95% Prediction Interval

Linear Regression

Dependent variable	More should be done to make diving more inclusive, h
Independent variables	Making diving more accessible, through better infrastructure would increase take up.
N	372

Regression Statistics

R	0.0299	***R-Squared***	**0.0009**	*Adjusted R-Squared*	-0.0018
MSE	0.4633	***S***	**0.6807**	*MAPE*	19.2090
Durbin-Watson (DW)	2.3094	*Log likelihood*	-383.7323		
Akaike inf. criterion (AIC)	2.0738	*AICc*	2.0739		
Schwarz criterion (BIC)	2.0949	*Hannan-Quinn criterion (H*	2.0822		
PRESS	173.2025	*PRESS RMSE*	0.6823	*Predicted R-Squared*	-0.0095

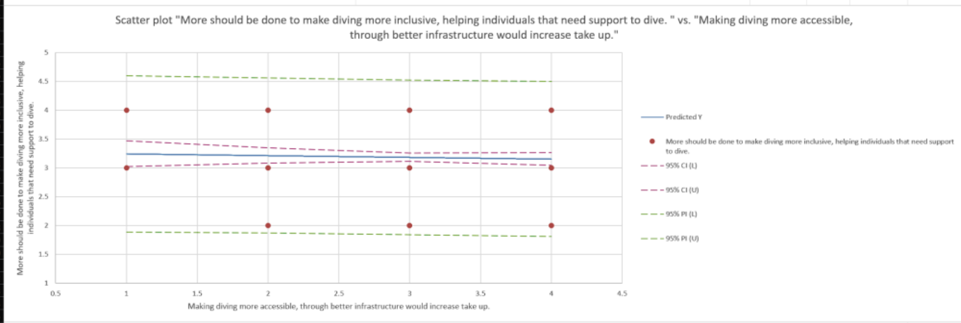
More should be done to make diving more inclusive, helping individuals that need support to dive. = 3.2747 - 0.0294 * Making diving more accessible, through better infrastructure would increase take up.

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1.	0.1538	0.1538	0.3320	0.5648
Residual	370.	171.4161	0.4633		
Total	371.	171.5699			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	3.2747	0.1633	2.9536	3.5957	20.0554	0.0000	*Rejected*			
Making diving more accessible, through better infrastructure would increase take up.	-0.0294	0.0511	-0.1299	0.0710	-0.5762	0.5648	*Accepted*	1.0000	1.0000	-0.0299
T (5%)	1.9664									

LCL - Lower limit of the 95% confidence interval
UCL - Upper limit of the 95% confidence interval



CI - 95% Confidence Interval

Linear Regression

Dependent variable	More should be done to make diving more inclusive, h
Independent variables	Making diving more accessible, through better infrastructure would increase take up.
N	372

Regression Statistics

R	0.0299	***R-Squared***	**0.0009**	*Adjusted R-Squared*	-0.0018
MSE	0.4633	***S***	**0.6807**	*MAPE*	19.2090
Durbin-Watson (DW)	2.3094	*Log likelihood*	-383.7323		
Akaike inf. criterion (AIC)	2.0738	*AICc*	2.0739		
Schwarz criterion (BIC)	2.0949	*Hannan-Quinn criterion (H*	2.0822		
PRESS	173.2025	*PRESS RMSE*	0.6823	*Predicted R-Squared*	-0.0095

More should be done to make diving more inclusive, helping individuals that need support to dive. = 3.2747 - 0.0294 * Making diving more accessible, through better infrastructure would increase take up.

ANOVA

	d.f.	*SS*	*MS*	*F*	*p-value*
Regression	1.	0.1538	0.1538	0.3320	0.5648
Residual	370.	171.4161	0.4633		
Total	371.	171.5699			

	Coefficients	*Std Err*	*LCL*	*UCL*	*t Stat*	*p-value*	*H0 (5%)*	*VIF*	*TOL*	*Beta*
Intercept	3.2747	0.1633	2.9536	3.5957	20.0554	0.0000	*Rejected*			
Making diving more accessible, through better infrastructure would increase take up.	-0.0294	0.0511	-0.1299	0.0710	-0.5762	0.5648	*Accepted*	1.0000	1.0000	-0.0299
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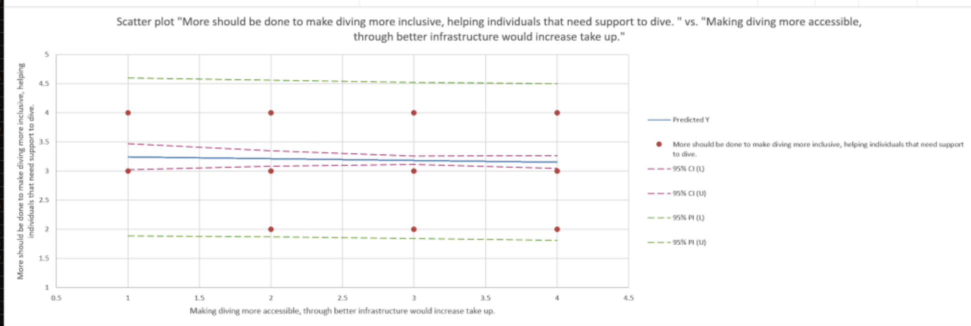

CI - 95% Confidence Interval

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