Administration and management strategies of archery athletes for excellence

Gosol Rodma[1], Yutthakarn Khaowanna[2], Chaturong Hemara[3]

[1]Department of Physical Education, Faculty of Education, Thailand National Sports University, Phetchabun Campus, Phetchabun, Thailand 67000.
Email: Gosolrodma2@hotmail.com
[2]Department of Sports Science Program, Faculty of Sports and Health Sciences, Thailand National Sports University Lampang Campus, Lampang, Thailand 52100.
E-mail: Yutthakancanoe@gmail.com
[3]Department of Physical Education, Faculty of Education Thailand National Sports University Lampang Campus, Lampang, Thailand 52100.
E-mail: hemaraiep@yahoo.ac.th
Corresponding author e-mail: Yutthakancanoe@gmail.com

ABSTRACT

Designing the quantitative and qualitative research method were to analyze and synthesize the database of the Thai archers to the draft, an administration and management strategies of archery athletes for excellence model were created. Creating the Ethnographic Delphi Futures Research (EDFR) with Delphi methodology to the Thailand National Sports University sample target group, consisting of 28 university administrators, 28 archery trainers, 17 executive administrators of the higher education institutions, and 113 archery athletes were administered. The factors that make athletes successful, covering nine issues, consisting of the trainers, facilities, sports science, creating the competitive experience, athletes, selection of athletes, administration and management, support and encouragement, and training and practicing assessed to the 45-item *Administration and Management of Archery for Excellence Questionnaire* (AMAEQ). The AMAEQ was valid and reliable for each item with the Factor Loading Analysis, and α-reliability on nine scales in three rounds by the archery professional experts' perceptions was correlated. The results indicate problems in Training and Practicing, Facility, Trainer, and Administration and Management Strategy scales that are improved to determine the direction of the strategy to draft the administration and management model. Comparisons between the grand means between the 1st and 2nd rounds are significant differences. Statistically, effective all on nine scales between the 1st and the 3rd rounds and are differentiated ($p<.001$). Regarding the 2nd and the 3rd rounds, four of the nine scales are different, significant at .05 levels with t-test analysis. The effect size (η^2) between the two variables' relationships at the databases' small and medium effect sizes. However, the problems that should be improved include the limited number of archery trainers and archery clubs still lacking standard sports equipment for expensive training In order to improve and solve the aforementioned problems, to draft a strategy to develop archery athletes of Thailand towards excellence to participate in archery competitions at the Olympic level with Delphi methodology and has been improved to be more flexible and appropriate for this research study under the strategy of 20 years after.

KEYWORDS: Administration and management strategy model, archery professional expert, The Ethnographic Delphi Futures Research (EDFR), archery athletes for excellences, validity and reliability, comparisons between means

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Introduction

Sports are important to people in the country in terms of improving their quality of life. Health promotion, good performance, and cultivating sportsmanship as a value reconciliation of the nation building pride Inspire, generate income, create a career and develop the country's economy. Exercise, playing sports, and participating in recreational activities to improve health and wellness and increase good interaction among people at all levels in society which many countries can use as an essential tool in solving human security problems and social security effectively and efficiently until it is widely accepted that playing sports is one of the most effective ways to help people around the world can enhance the experience of social life and live happily together (Sports Authority of Thailand. 2017). Athletes with potential and abilities will receive higher fame, prestige, prize money, and benefits than average athletes. But our country still needs more athletes with many potential and increased capabilities in each sport. Developing the potential and competency of athletes to excellence to produce concrete and practical results need to rely on a long time. Factors relevant is a critical element that starts from creating and producing athletes wholly and systematically in every step from all parties involved, especially the archery athletes. Archery has been an official sport since the 1972 Olympic Games in Munich, Germany. But none of Thailand's archery athletes has been qualified to participate in the competition until the Olympic Games in London, England, in 2012, there was only one archer (Ministry of Tourism and Sports, 2017).

Archery is a sport that does not focus on strength or speed. Rather, it is an art that requires practice and skill with great precision. Archery is a sport that is not very popular. Because the equipment has a relatively high price including training or teaching locations are not as common as other sports. But it is a sport that organizes sporting events at an international level, such as the SEA Games, Asian Games, and the Olympic Games. There are both male and female athletes. In archery competitions that are popular, it is a target type competition by placing targets at various points according to the specified distance In most cases, archery targets are divided into two types: large targets are used in competitions at 60, 70, 90 meters, and small targets are used in competitions at 30, 50 meters. Hit the goal the most or the closest will win. This sport focuses solely on archery accuracy on target. Archery athletes should be in good physical condition. Especially the arms and wrists must be strong and stable. It takes good concentration to make the arrow hit the target exactly the way it wants.

Excellence (noun), in the Mid-14th Century., "superiority, greatness, distinction" in anything, from Old French excellence, from Latin excellentia "superiority, excellence," from excellentem (nominative excellens) "towering, distinguished, superior," present participle of excellere "surpass, be superior; to rise, be eminent," from ex "out from" (see ex-) + -cellere "rise high, tower," related to the census "high, lofty, great," from PIE root *kel- (2) "to be prominent; hill." From late in the 14th Century: As a "mark or trait of superiority, that in which something or someone excels." (Harper, 2017). Excellence means greatness, the very best. Achieving excellence is never easy to do. Excellence is a quality that people really appreciate because it's so hard to find. Excellence is the quality of excelling, of being truly the best at something. Getting an A+ shows excellence (Gladwell, 2011).

Archery trainer excellence characteristics: The archer skill set continually evolves, with new techniques and practice methods for never-ending learning. An archer at any level of proficiency can continue his or her evolution by working with an archery coach or instructor. Most coaches teach beyond mechanics and technique. For example, coaches will work with athletes on the mental aspects of archery, tournament preparation, nutrition, and physical training. A good coach helps an archer or archery team build confidence, hone skills, and excel in competition. Any archery instructor or coach you work with should be certified (Ridenour, 2018). Some coaches think that once they teach athletes a new approach, the athlete should be able to apply it right away. Likewise, some athletes believe they should be able to adjust their game and have it pay off immediately. Change doesn't happen overnight.

Three must-have keys to success in sports are good instruction, practice and repetition, and, most importantly, trust in athletes' skills (Edger, 2012).

The qualities make a good archer for excellence: Everyone starts as a beginner. No one is perfect at something the first time they do it. Sure, there are prodigies and their finding that they are a natural at a sport, activity, or subject. But even with these select few who are extremely talented, skill should still be taught. The most talented and skilled archers take loads of time to train and prepare for competitions. To be a skilled archer, it is necessary to train a set of fundamental skills, including balance and coordination through training, archery athletes will develop a distinct way of shooting an arrow, accuracy, calm and composure, precision, perception of depth, arrow drawing and handling, arrow knocking, and take care of their equipment (Fleximounts.com, 2022). These are the most important technique or factor in scoring well in archery is Core Stability. Without a solid core, an archer will need to be very lucky to get a good score (Schilling, 2018).

What are the facilities in archery? The best archery facilities' characteristics: Archery is a sport defined by the ability of the competitor to accurately shoot an arrow at a given target in a certain time span. Archery is composed of six phases: bow hold, drawing, full draw, aiming, release, and follow-through (Kim et al., 2018). The equipment can come later, but the most important thing is archers' form, their technique and their mental approach. The sport of archery requires precision, control, focus, physical ability and determination. Archery equipment checklist: Armguard, a guard on the arm to provide protection from abrasion when an arrow is released, arrow, bows, bowstring, chest guard, finger tab or shooting glove, quiver, and nock. Several sports and recreational organizations employ people with sport management skills from college teams to stadiums, sports media firms to the competitions' games (Law Insider, 2016).

Furthermore, the development of excellence of Thai athletes should strive for perfection to win competitions at all levels. It boosts the country's economy, symbolizes national reconciliation, and exemplifies honorable sportsmanship. Sport has a significant impact on the country's social and economic growth. It is vital to have sports staff and a policy to drive sports toward excellence to create stability, prosperity, and sustainability. Amateur and professional athletes, sports personnel, sports-related organizations for benefit by improving athletes' physical and mental capacities, and sports-related government agencies; good management is required for the excellence of athletes to win a significant victory in the competition and have an impact on the country's prestige and economy (Srisahakit, Jamjumrus, & Tipayatikumporn, 2022).

In sports administration, sports administrators could work for secondary, collegiate, and university athletic departments, professional teams, sports facilities, country clubs, fitness clubs, and community athletic associations. Some sports administrators collaborate with scouts and coaches to create winning rosters (Arkansas State University, 2017). Sports administrator requirements include a degree in sports administration, business studies, or a related field; prior experience in administration; ability to multitask; excellent interpersonal and communication skills; excellent time management and planning skills; and computer literacy skills (Better Team, 2018).

Sport management refers to the management of various sporting functions in sports and recreation organizations. Depending on their specific job title, sport management professionals might plan, direct, organize or budget within a sports-related organization. Sport management professionals tend to have a bachelor's degree at minimum. Leadership positions in sports and recreation usually require at least a bachelor of sports science administration. An undergraduate sport management degree prepares students for entry-level positions in the TNSUs. Some start with a four-year undergraduate program at a university. Others begin by completing a two-year associate degree at a community college before transferring to a four-year university. Several laws impact the world of professional, amateur and recreational sports. Sports lawyers help athletes, coaches, managers and organizations navigate those laws and, when possible, avoid costly litigation (Seiter & Freeman, 2022).

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Sports management and sports administration are similar and often overlap, although management focuses more on the business element. The primary qualifications for a sports administration or sports management job are a bachelor's degree in a relevant field and experience working with an athletic program. Sometimes, problems and considerations are involved in successfully managing sports and recreation programs. Areas considered include program planning, organization, leadership and evaluation, and current organizational trends. This research project provides undergraduate sports archery students with a working knowledge of the administrative, managerial, supervisory, leadership processes in health, physical education, recreation, fitness, and sports organizations. The development of competencies in these areas is designed to emphasize the importance of academic training of competent professionals who will soon be leaders "in the field" of the sporting excellence for the archer athletes at the Thailand National Sports Universities in Northern Region Campuses are provided. The level of the archers was better than in the last World University Archery Championship. The standard of University archery is improving worldwide. American and Korean Olympic archers showed supremacy in the sport by taking the number one spots in both divisions and events during the preliminary round competition. Chang Hwan Lee (KOR) took the honor by scoring 674 points in the men's division of the Individual Recurve event. The average score of Thai archery athletes participating in the competition found that the results of the competition have an average score of 314-379 points (International University Sports Federation, 2018).

In the past, the administration and management of archery excellence have still been operating in a limited area. Current information on archery teams across Thailand There are quite a few organizations responsible for producing archers. As a result, the number of archery athletes across Thailand combined is limited, which is considered very small compared to other sports. Images of being an archery player in the Thai national team, both in the past and present, are not provided. All these issues motivate the researcher team to be interested in the administration and management

strategies trend of archery excellence. How there are the qualities of archery athletes be developed and enhanced? How does the framework development provider of archery athletes and as a mechanism important in pushing archery athletes to grow continuously in the future?

Methodology

According to the National Sports Development Plan No. 6 (2017-2021) of the Ministry of Tourism and Sports (2017), Strategy 3 mentions the development of sports for excellence and furthering success at the professional level. A necessary approach is to systematically develop sports personnel with international standards for developing sports for excellence and sustainable careers. Sports organizations must therefore focus on the development of athletes according to the indicators. The number of athletes has been accurately tracked and recorded, and the rate is increasing steadily, not less than 5 percent per year. There is a continuous increase rate of sports personnel who have been developed, not less than 5 percent per year. This research study was focused on drafting an executive administration model and managing strategies of the principle of archery athletes for excellence.

Research Aims

To analyze and synthesize databases and factors for drafting sports strategic development model to the feasibility of the principles of administration and management of archery athletes for excellence according to the national strategy in Thailand using the *Ethnographic Delphi Future Research* (EDFR) was created.

Research Limitations

Conditions of administration and management strategies of archery athletes for excellence are provided. First, according to the factors that make athletes successful, covering nine issues, consisting of the instructor, facilities, sports science, creating the competitive experience, athletes, selection of athletes, administration and

management, support and encouragement, and training and practicing. Second, assessing the future of archery administration and management for excellence according to expert archery professional's opinions and thinking with the EDFR (Ethnographic Delphi Future Research) research process.

Sample Size

The sample size was involved in the administration and management of archery athletes of the 17 Campus of the Thailand National Sports University, consisting of 28 university administrators, 28 archery trainers, and the executive administrators of the higher education institutions who sent teams to participate in the Thailand Archery Championships 2018, totaling 17 persons (these are 73 professional experts of the group sample size) (executives with decision-making authority or policy compliance group, the group of trainers, the group of scholars who are both past and present or have direct experience on the archery). In terms of the archery athletes, there were 113 athletes (80 male athletes and 33 female athletes that these athletes who have participated in national archery competitions) that schedule planning on October 1, 2019, to September 30, 2020, at the Thailand National Sports University Lampang Campus using the quantitative research method was modified. In terms of the qualitative research method, designing the focus group discussions with 11 archery professional experts for a comparative study to analyze the direction in drafting model of the administration and management of archery athletes for excellence with purposive random sampling was selected.

Research Procedures

Step I: Modified the Ethnographic Delphi Futures Research (EDFR)

The EDFR research technique was developed by combining EFR (Ethnographic Futures Research) with Delphi. The EDFR process is similar to that of Delphi. Still, the methodology has been improved to be more flexible and appropriate to the vision, mission, objectives, goals, and

strategies of operation archery administration and management plan for excellence through the analysis of relevant factors for strategic planning in setting directions, objectives, and goals for future operations that is consistent with the National Sports Development Plan and is appropriate can be utilized, and it is possible to use.

Step II: The EFR interview method

The EFR interview method was used after the first step of the interviews. The researcher analyzes and synthesizes the data and creates a tool. It is a questionnaire in which professional experts' perceptions' responses according to a Delphi format to filter professional expert opinions.

Step III: Professional experts' consensus

Assessing the consensus conducted about 2-3 times, and then the data was analyzed for trends that are very likely and consistent with opinions among professional experts to summarize, it's the future.

Step IV: Professional experts were selected

Define a professional expert group which was very important and necessary. In this regard, the research team has people with real expertise that consisting of executives decision archery or policy compliance group, the group of trainers, the group of scholars whose experiences are both past and present or who have direct experience, which is defined as the issue that the researcher is studying. However, these professional experts meet the criteria set by the researcher. The results of the research should be, therefore, more reliable.

Step V: Analyze and synthesize data

Analyze and synthesize information obtained from expert interviews. To create the research instruments for the Delphi technique with the closed-ended questionnaire. The Delphi technique is a well-established approach to answering a research question by identifying a consensus view across subject experts. It allows for reflection among participants, who can nuance and reconsider their opinion based on the anonymized data and opinions of others for making sense the Delphi (second and third rounds). Writing the future drafting the principal framework to

summarize as a result of the research was prepared.

Step VI: Comparison between EDFR and Delphi

In the first round of the EDFR study, researchers used EFR interviews to determine and expect the most likely trends and take to this research study in the second and third rounds. This is a genuine respect for the expertise of experts. The EDFR research model was used for the first round of interviews in which trends and issues are obtained that correspond to the aims of future research and every movement or direction. The reconsidered opinions were created by the professional experts in the second and third rounds of EDFR. However, the Delphi Research: Round 2 and 3 patterns are opinion assessments with a closed-ended questionnaire that the investigator generates from the results of the first round interview. An expert's responses shape an expert's mindset based on their expertise.

Step VII: Summarized thee EDFR

Designing for this research study, using EDFR research method has tended to be obtained from interviews. The first round feeds back to all experts for further consideration in Delphi, making senses to the entire trend systematically considered equally. The conclusions drawn from the EDFR study are therefore systematic and promising, which are comprehensive and reliable.

Step VIII: Creative research instrument

Modified the *Ethnographic Delphi Future Research* (EDFR) was analyzed and synthesized the databases and factors for drafting sports strategic development model to the feasibility of the principles of administration and management of archery athletes for excellence according to the national strategy in archery sports on three actually rounds. The idea of creating a research instrument was derived from the interviews. The opinions and perceptions of all professional experts in the first round will be taken as information after reconsideration in Delphi. All trends were systematically considered equally. The research instrument was created to assess the perceptions of the sample on nine scales, each of which consisted of 5 items in five options with Likert's scales (Likert, 1932).
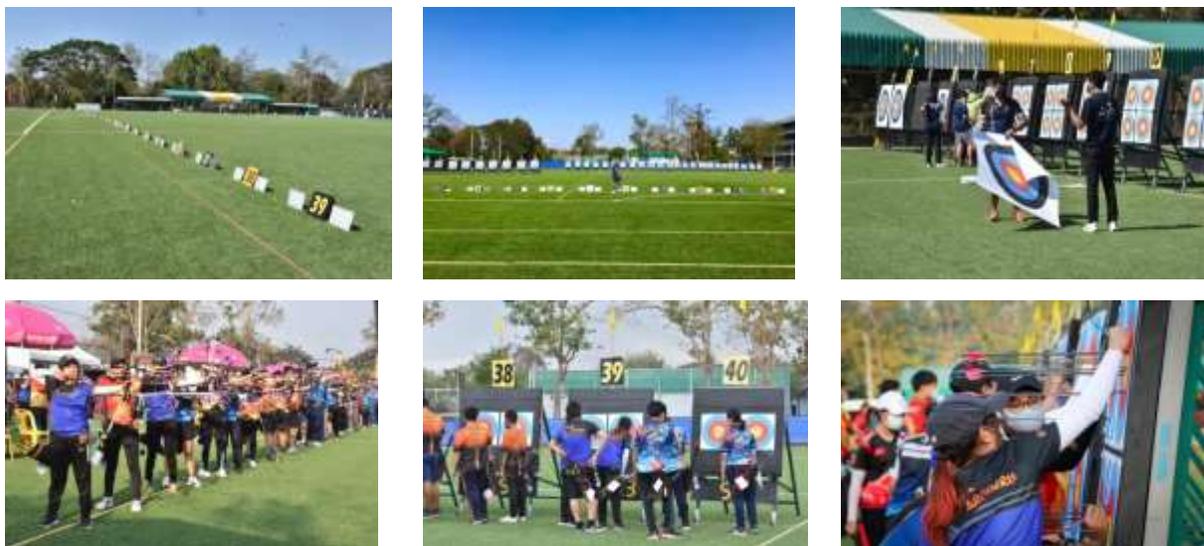
Photo Caption 1: Training and practicing of the archers for excellence environment

 Source: Photos by Research Team

These photos as above show the training and practicing of the archers for excellence environment. Therefore, the research instrument built under the EDFR research model was

systematic, comprehensive, and reliable trends and analyzing and synthesizing with interference statistics for experts to suggest. The research team will improve and revise according to the context of the experts' ideas for three rounds until the completion of the drafting of archery administration and management principles for excellence is wholly accepted and can be applied in practice according to the archery strategy in national sports in the future. Designing the qualitative research method with the *Focus Group Discussion* to the 11 archery professional experts for a comparative study to analyze the direction in drafting model of the administration and management of archery athletes for excellence was discussed and interviewed.

Research Instrument

Administration and Management of Archery for Excellence Questionnaire (AMAEQ)

A questionnaire for stakeholders of organizations related to the state of administration and management of archery excellence. The 45-item *Administration and Management of Archery for Excellence Questionnaire* (AMAEQ) consisted of nine scales, namely: *Trainer* (Tra), *Facility* (Fac), *Sports Science* (SSc), *Creating Competitive Experience* (CCE), *Archery Athlete Behaviour* (AAB), *Selected Archery Athlete* (SAA), *Administration and Management Strategy* (AMS), Supporting and Encouragement (SEn), and *Training and Practicing* (TPr) scales. Each scale consists of 5 items in five options: *Strongly Agree* (SA, refers to 5 scoring level), *Agree* (Ag, refers to 4 scoring level), *Uncertain* (Un, refers to 3 scoring level), *Disagree* (Dg, refers to 2 scoring level), and *Strongly Disagree* (SD, refers to 1 scoring level) (Likert, 1932). At the end of the AMAEQ, an open-ended question of the perceptions and suggestions of the administration and management of archery for excellence subjects in each round was assessed.

Data Analysis

Data analysis and synthesis to assess the reliability and validity of research tools and research results with the foundational statistic, such as mean, standard deviation, variance, and F-test was analyzed. Interference statistical analysis and synthesis features include: Factor Loading analysis for each item, Internal consistency (Cronbach alpha reliability) coefficient analysis (Cronbach, 1951), t-test, ANOVA eta^2, and Pearson's Correlation analysis was synthesized.

RESULTS

Modified the Ethnographic Delphi Future Research (EDFR) research method was developed by combining EFR (Ethnographic Futures Research) with Delphi. The EDFR process is similar to that of Delphi, which the methodology has been improved to be more flexible and appropriate. The first round of assessment would be conducted using the EFR interview method after the first round of interviews. In December 2019, the researchers analyzed and synthesized the data and created the research instrument (the *Administration and Management of Archery for Excellence Questionnaire* (AMAEQ)). This was an AMAEQ questionnaire in which experts answered according to the Delphi model to the 73-filter expert opinions in January 2020. These professional experts' opinions and perceptions were assessed on a 5-point Likert's scale with 9 scales; each scale consists of 5 items, totaling 45 items.

Validity of the AMAEQ questionnaire

Factor Loading Analysis

Factor loading is basically the correlation coefficient for the variable and factor. Factor loading shows the variance explained by the variable on that particular factor. As a rule of thumb, 0.40 or higher factor loading represents that the factor extracts sufficient variance from that variable are omitted. Factor analysis is most commonly used to identify the relationship between all of the items included 5 items for each scale in a given dataset. Following the advice of Field (2013: 692) we recommend suppressing factor loadings less than 0.3. Any item with all scores suppressed should be removed; scores

greater than 0.40 are considered stable (Guadagnoli & Velicer, 1988).

Percentage of Variances

The variance percentage calculation is the difference between two numbers, divided by the first number, then multiplied by 100. Variance explained by factor analysis must not maximum of 100% but it should not be less than 60%. It should not be less than 60%. If the variance explained is 35%, it shows the data is not useful, and may need to revisit measures, and even the data collection process (Bhandari, 2022). Essentially, if the "between" variance is much larger than the "within" variance, the factor is considered statistically significant. Recall, ANOVA seeks to determine a difference in means at each level of a factor. If the factor level impacts the mean, then that factor is statistically significant (Natoli, 2017).

Eigenvalues

Eigenvalues are associated with eigenvectors in Linear algebra. Both terms are used in the analysis of linear transformations. Eigenvalues are the special set of scalar values that is associated with the set of linear equations most probably in the matrix equations. The eigenvectors are also termed as characteristic roots. It is a non-zero vector that can be changed at most by its scalar factor after the application of linear transformations (Bhardwej, 2021). Originally used to study principal axes of the rotational motion of rigid bodies, eigenvalues and eigenvectors have a wide range of applications, for example in stability analysis, vibration analysis, atomic orbitals, facial recognition, and matrix diagonalization (Burden & Faires, 1993),

The 1st Round of the EDFR

The validity was determined with a group of 73 archery professional experts' perceptions and conduct the first round of interviews using the Factor Loading Analysis was analyzed on each item for the AMAEQ on night scales, each scale consists of 5 items. The results as reported in Table 1 as above.

Table 1. Factor loading analysis validity for each item in the first round of the AMAEQ

Item	Tra	Fac	SSc	CCE	AAE	SAA	AMS	SEn	TPr
2	0.639								
3	0.626								
1	0.614								
4	0.561								
5	0.360								
8		0.699							
10		0.645							
9		0.421							
7		0.369							
6		0.320							
13			0.737						
15			0.609						
12			0.589						

11	0.578				
14	0.563				
19		0.726			
17		0.689			
18		0.648			
16		0.553			
20		0.290			
24			0.647		
22			0.616		
23			0.528		
25			0.477		
21			0.451		
27				0.704	
29				0.651	
28				0.606	
30				0.603	
26				0.426	
33					0.633
32					0.589
31					0.537
34					0.532
35					0.280
37					0.662
36					0.656
39					0.635
38					0.562
40					0.525
43					0.808
42					0.742
44					0.182
45					0.060

Item									
41									-0.152
% of Variances	56.087	53.088	61.519	58.290	54.376	57.792	51.425	60.190	38.300
Eigenvalues	2.804	2.654	3.076	2.918	2.719	2.990	2.571	3.010	1.915

Loading smaller than 0.40 omitted. N=73

As reported in Table 1, the item numbers as of items 5, 6, 7, 20, 35, 41, 44, and 45 recommend suppressing factor loadings less than 0.40. Any item with all scores suppressed should be removed, scores greater than 0.40 are considered stable. However, as a rule of thumb, 0.70 or higher factor loading represents that the factor extracts sufficient variance from that variable for the AMAEQ by the professional experts are perceived.

Although this research project was to develop archery personnel for excellence, to create and build archery athletes to be at the national and international levels, to establish archery coaches to have the potential to compete at national and international levels, and to develop personnel involved in the management of archery clubs and clubs to be modern. The results in Table 1 indicate that there are the problems in *Training and Practicing, Facility, Trainer,* and *Administration and Management Strategy* scales.

The 2ⁿᵈ Round of the EDFR

According to the first round of interviews with the EDFR, the results of the analysis of professional expert perceptions in Table 1 revealed that many questions lacked credibility and confidence in the drafting of the administration and management archery athlete for excellence model to the arrangements.

Table 2. Factor loading analysis validity for each item in the second round of the AMAEQ

Item	Tra	Fac	SSc	CCE	AAE	SAA	AMS	SEn	TPr
1	0.940								
3	0.756								
2	0.740								
4	0.694								
5	0.674								
6		0.779							
7		0.761							
8		0.724							
10		0.695							
9		0.642							
13			0.800						
12			0.772						

14	0.760				
15	0.725				
11	0.718				
20		0.802			
19		0.773			
16		0.744			
17		0.706			
18		0.674			
22			0.770		
23			0.762		
24			0.759		
25			0.695		
21			0.648		
28				0.842	
26				0.807	
30				0.755	
27				0.753	
29				0.725	
31					0.810
34					0.797
32					0.791
35					0.690
33					0.681
39						0.813
36						0.806
40						0.803
38						0.767
37						0.727
41							0.980
43							0.790
42							0.783

44									0.762
45									0.629
% of Variances	61.704	61.192	62.498	60.288	59.349	63.808	60.680	63.426	64.329
Eigenvalues	3.158	3.085	3.287	2.961	2.917	3.590	3.017	3.414	3.514

Loading smaller than 0.40 omitted. N=73

In Table 2 as above, the research team, therefore, seeks most of items for the s and advice from experts was revised in the second round. This was an AMAEQ questionnaire in which experts answered according to the Delphi model to the 73-filter expert opinions in April 2020. The results as reported in Table 2. The AMAEQ Form was subjected to separated principal components factor analyses (with varimax rotation) involving archery professional experts' scores. The factor structure that emerged replicated to a large extent. Table 2 lists the items which were found to have factor loading greater than 0.40 (which is the minimum value conventionally accepted as meaningful in factor analysis) and indicates that to improve the drafting of the administration and management archery athlete for excellence model for developing the potential of archery athletes to have skills and techniques to achieve excellence, developing archery trainers to have national and international knowledge, and the development of personnel related to the management of archery clubs to be effective into the national and international archery sports in the future that in the opinions and perceptions of the archery professional experts, there are still minor problems in various scales, including *Trainers, Facility, Creating Competitive Experience, Archery Athlete Behaviour, Selected Archery Athlete (SAA), Administration and Management Strategy, Supporting and Encouragement*, and *Training and Practicing* scales.

The 3ʳᵈ Round of the EDFR

As shown in Tables 1 and 2, the weaknesses that need to be improved and corrected from the problem of skill specialists were enhanced. Archery techniques are limited, the number of athletes is limited, the publicity of corporate events is rarely known to others, the equipment is inadequate, of poor quality, outdated due to its high cost, the number of training facilities is limited, limited budget Affecting support in various aspects such as compensation, welfare, sending to competitions, the organization lacks promotion to participate in contests at all levels. There is no opportunity to select athletes because of the limited number.

Although archery is ideal for building concentration, the push for sports to be competitive at national and university levels is an alternative sport that individuals can use as a physical activity. It is an individual sport that can be practiced continuously at any age. However, skill experts' archery techniques are limited, equipment is inadequate, insufficient, and outdated due to expensive prices, training facilities are few, athletes are minor, there is no opportunity to recruit athletes because of the limited number of athletes, and the budget is limited. Affecting support in various areas such as compensation, welfare, sending competitions, and lack of promotion to participate in contests at all levels.

The archery professional experts' responses' of their opinions using the SWOT analysis is a strategic planning and strategic management technique used to help a person or organization identify Strengths, Weaknesses, Opportunities, and Threats related to business competition or project planning. It is sometimes called situational assessment or situational analysis. The results showed in Figure 2.
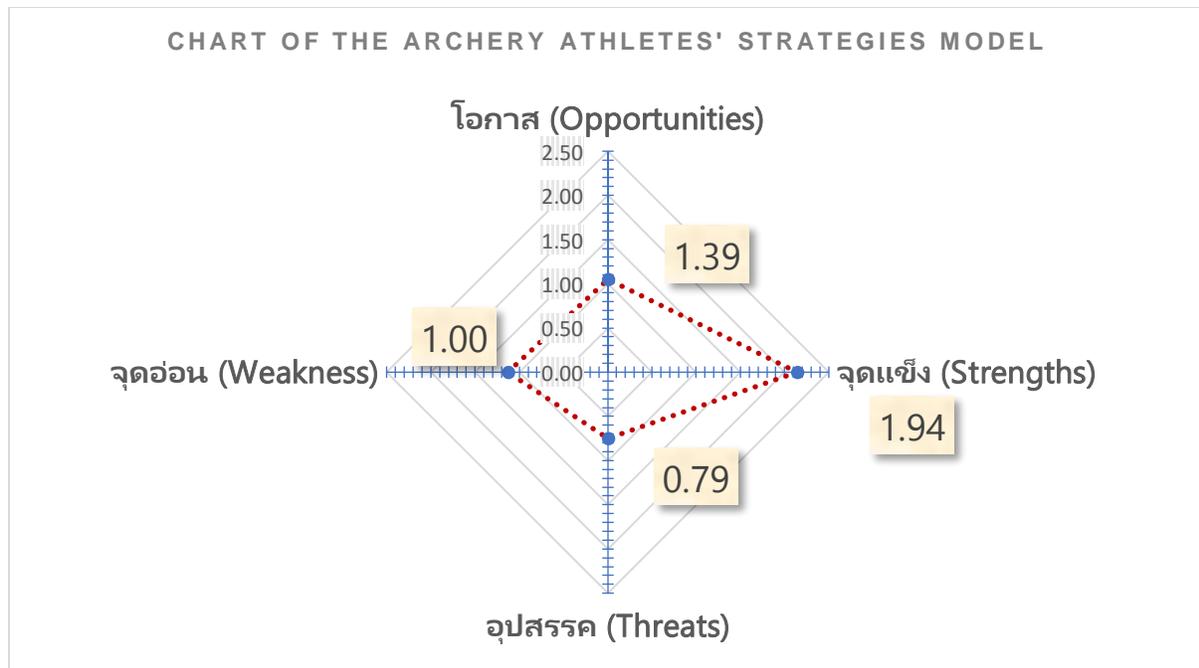
Strategies for developing athletes of archery clubs or sports clubs for the excellence of archery athletes to achieve success at the national level are provided, and international must be consistent with Strategy 3 of the 6th National Sports Development Plan (2017 - 2021) on guidelines consisting of the selection and development of archery talented athletes, a system for finding athletes From local levels throughout the country, establishing and promoting a continuous and sustainable athlete development system, and promoting the sending of athletes to create opportunities to participate in international competitions and enhance athlete preparation to increase the chances of success.

Table 3: Factor loading analysis validity for each item in the third round of the AMAEQ

Item	Tra	Fac	SSc	CCE	AAE	SAA	AMS	SEn	TPr
1	0.940								
3	0.856								
2	0.780								
4	0.745								
5	0.724								
6		0.891							
7		0.872							
8		0.804							
10		0.793							

9	0.756			
13		0.900		
12		0.872		
14		0.860		
15		0.755		
11		0.738		
20			0.901	
19			0.871	
16			0.804	
17			0.771	
18			0.754	
22				0.907
23				0.842
24				0.820
25				0.748
21				0.726
28				0.903
26				0.851
30				0.790
27				0.767
29				0.732
31				0.900
34				0.860
32				0.825
35				0.778
33				0.762
39				0.930
36				0.845
40				0.818
38				0.787
37				0.736

41								0.980
43								0.860
42								0.831
44								0.777
45								0.736
% of Variances	72.611	71.012	73.124	73.918	70.888	74.680	76.698	77.026	78.416
Eigenvalues	5.021	4.704	5.342	5.831	4.615	5.690	5.977	6.123	6.514

Loading smaller than 0.40 omitted. N=73

Therefore, the research team needs to develop a research tool that will trend from interviews and professional expert feedback for a third round in July 2020 to feed back to all experts for further consideration in Delphi to be considered in an equal system. The conclusions obtained from the EDFR research are therefore systematic and reliable in leading to the final drafting of the administration and management of archery excellence model. Using Factor Loading Analysis was analyzed, the results as reported in Table 3.

Table 3 as below, reports factor loading analysis which is an analysis solution most commonly used to identify the relationship between all of the items on nine scales for the AMAEQ included in a given dataset. When applied to a large amount of data, it compresses the set into a smaller group that is far more manageable and easier to understand. As a rule, it shows 0.700, and higher factor loading represents that the factor extracts sufficient variance from that item in the third round of the EDFR research method. The EDFR method, therefore, provides a more reliable system of obtaining correlative information that is valid and reliable, significantly.

Internal Consistency (Cronbach Alpha Reliability) Coefficient for the AMAEQ

The 45-item *Administration and Management of Archery for Excellence Questionnaire* (AMAEQ) consisted of nine scales, namely: *Trainer* (Tra), *Facility* (Fac), *Sports Science* (SSc), *Creating Competitive Experience* (CCE), *Archery Athlete Behaviour* (AAB), *Selected Archery Athlete* (SAA), *Administration and Management Strategy* (AMS), Supporting and Encouragement (SEn), and *Training and Practicing* (TPr) scales were modified from the thinking, opinions, perceptions, and suggestions from the archery professional experts in three accounting rounds of the archery sports in Thailand. Creating the internal consistency (Cronbach Alpha Reliability) coefficient for the AMAEQ confirmed the validity and reliability of the drafting of the administration and management of the archery excellence model. The results as reported in Table 4.

Table 4: Internal consistency (Cronbach alpha reliability) coefficient for the AMAEQ, item mean, item standard deviation, and F-test for the AMAEQ

Scale	α-Reliability			Item mean			Standard deviation			F-test		
	round number			round number			round number			Accounting round		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Tra	0.758	0.791	0.802	16.397	18.712	19.096	2.537	3.025	3.074	10.414***	5.369**	1.482

Fac	0.573	0.627	0.772	16.384	17.233	19.315	2.191	2.314	2.319	9.794***	5.066**	4.091**
SSc	0.680	0.814	0.892	16.323	17.890	19.945	2.601	2.692	3.458	2.591*	2.229	2.186
CCE	0.542	0.678	0.815	16.397	18.329	19.973	2.356	2.698	2.716	3.293*	2.645	0.542
AAB	0.611	0.633	0.788	16.671	20.178	20.301	2.421	2.890	2.382	5.076**	3.109*	2.121
SAA	0.523	0.658	0.812	16.603	19.904	20.945	1.177	3.163	2.597	74.151***	1.202	0.677
AMS	0.545	0.732	0.775	16.274	20.247	20.521	1.127	2.102	3.163	55.847***	2.122	1.529
SEn	0.610	0.653	0.705	16.384	18.867	19.000	1.491	2.017	2.721	23.872***	14.842***	0.497*
TPr	0.491	0.678	0.831	16.315	19.808	21.123	1.166	1.987	1.753	96.595***	8.994***	3.550*

*N=73, *p<.05, **p<.01, ***p<.001*

This article explores how this statistic is used in reporting sports education research and what it represents, as reported in Table 4. More seriously, illustrative examples from the sports education literature demonstrate that alpha may be acceptable even when there are recognized problems with the scales concerned (five items for each scale). This was generally seen as $0.60 \leq$ Cronbach's $\alpha \geq 0.80$ (acceptable) (Griethuijsen et al., 2014). The archery professional experts of their perceptions indicate that the internal consistency (Cronbach alpha reliability) coefficients as $0.491 \leq \alpha \geq 0.758$ for the 1st round of the EDFR interview method is sufficient. The researcher analyzes and synthesizes the data, creates the AMEAQ of the consensus in the 2nd and 3rd rounds, and then analyzes the data for trends that are very likely and consistent with perceptions among archery professional experts to summarize; it's the future. This was seen as $0.633 \leq \alpha \geq 0.814$ for the 2nd round (acceptable) and $0.705 \leq \alpha \geq 0.831$ for the 3rd round, which is highly acceptable reliability for each scale.

The item means scores indicate a minimum of 5 and a maximum of 25 for the 5-item AMEAQ in five options. The results have found that item mean scores range from 16.274 to 16.671 for the 1st round, from 17.323 to 20.301, and from 19.000 to 21.123 for the 2nd and 3rd rounds, respectively. In most cases, the item standard deviations are seen in Table 4. The F-test is used in regression analysis to test the research objectives; It is also used in statistical analysis when comparing statistical models that have been fitted using the same underlying factors and data set to determine the model with the best fit. The high F-value graph shows a case where the variability of group means is large relative to the within-group variability.

Comparisons between the grand means (scale means ($\overline{X}$)) of the 1st round and the 2nd round, the 2nd round and the 3rd round, and the 1st round and the 3rd round for the AMAEQ questionnaire

The grand means are a numerical average (mean) of a group of averages on five items for each of the nine scales of the AMAEQ. In ANOVA, the grand mean of a set of multiple subsamples is the mean of all observations: every data point is divided by the joint sample size. Group means centering will produce intercepts weighted by the proportion of 1 to 0 values for each group, whereas grand-mean centering will produce intercepts weighted by the proportion of 1 to 0 in the entire sample. Using t-test used to compare the grand means of the two

groups. It is often used in hypothesis testing to determine whether a process or treatment actually has an effect on the population of interest, or whether two groups are different from one another. The results as reported in Table 5.

Table 5: Comparisons between the grand means (scale means (($\overline{\text{X}}$)) of the 1st round and the 2nd round, the 2nd round and the 3rd round, and the 1st round and the 3rd round, Scale Standard deviation, Mean different, t-test, and Effect size (ANOVA (*eta*²)) for the AMAEQ

Scale	Paired round number	Scale Mean ($\overline{\text{X}}$)		Scale S.D.		Mean different	t-test	Effect size (ANOVA eta²)	
								eta²	Size
0.203Tra	1st - 2nd round	3.279	3.742	0.507	0.605	0.463	6.096***	0.199	Small
	2nd – 3rd round	3.742	3.819	0.605	0.392	0.077	0.254	0.111	Small
	1st – 3rd round	3.279	3.819	0.507	0.392	0.540	6.179***	0.203	Medium
Fac	1st - 2nd round	3.277	3.647	0.464	0.546	0.370	4.971***	0.204	Medium
	2nd – 3rd round	3.647	3.863	0.546	0.438	0.216	2.807**	0.151	Small
	1st – 3rd round	3.277	3.863	0.464	0.438	0.586	7.455***	0.205	Medium
SSc	1st - 2nd round	3.277	3.518	0.560	0.692	0.241	3.020**	0.188	Small
	2nd – 3rd round	3.518	3.959	0.692	0.538	0.441	4.441***	0.150	Small
	1st – 3rd round	3.277	3.959	0.560	0.538	0.682	7.540***	0.213	Medium
CCE	1st - 2nd round	3.279	3.666	0.593	0.539	0.387	4.236***	0.191	Small
	2nd – 3rd round	3.666	3.995	0.539	0.471	0.329	4.217***	0.237	Medium
	1st – 3rd round	3.279	3.995	0.593	0.471	0.716	8.491***	0.342	Medium
AAB	1st - 2nd round	3.334	4.036	0.484	0.578	0.702	7.968***	0.128	Small
	2nd – 3rd round	4.036	4.060	0.578	0.476	0.024	0.262	0.194	Small

	1st – 3rd round	3.334	4.060	0.484	0.476	0.726	9.067***	0.292	Medium
SAA	1st - 2nd round	3.321	3.981	0.519	0.632	0.660	6.692***	0.169	Small
	2nd – 3rd round	3.981	4.189	0.632	0.235	0.208	2.698**	0.057	Small
	1st – 3rd round	3.321	4.189	0.519	0.235	0.868	12.578***	0.298	Medium
AMS	1st - 2nd round	3.255	4.049	0.501	0.424	0.794	12.043***	0.233	Medium
	2nd – 3rd round	4.049	4.104	0.424	0.226	0.055	0.901	0.093	Small
	1st – 3rd round	3.255	4.104	0.501	0.226	0.844	12.192***	0.268	Medium
SEn	1st - 2nd round	3.277	3.753	0.544	0.403	0.476	6.105***	0.189	Small
	2nd – 3rd round	3.753	3.800	0.403	0.298	0.047	0.756	0.064	Small
	1st – 3rd round	3.277	3.800	0.544	0.298	0.523	7.502***	0.338	Medium
TPr	1st - 2nd round	3.263	3.962	0.426	0.397	0.299	8.707***	0.282	Medium
	2nd – 3rd round	3.962	4.225	0.397	0.233	0.263	5.041***	0.223	Medium
	1st – 3rd round	3.263	4.225	0.426	0.233	0.962	19.693***	0.362	Medium

N=73, *p<.05, **p<.01, ***p<.001

As reported in Table 5, the results have found that $3.277 < \bar{x} < 3.334$; $3.578 < \bar{x} < 4.036$; and $3.800 < \bar{x} < 4.255$ for the 1st, 2nd, and 3rd rounds, respectively. Using the t-test determines whether the means of the two groups are equal. Most of the grand means that are compared between the 1st and 2nd rounds are significant differences at the .01 levels. Statistically, significant all on nine scales between the 1st and the 3rd rounds and are differentiated ($p<.001$). Regarding the 2nd and the 3rd rounds, four of the nine scales are different, significant at .05 levels. The effect size (η^2) is a quantitative measure of the magnitude of the experimental effect. The larger the effect size, the stronger the relationship between the two variables. The ways of reporting the strength of a relationship between two or more variables are compared. If $\eta^2 < 0.20$ (small size); $0.21 < \eta^2 < 0.50$ (medium size); $0.51 < \eta^2 < 0.80$ (large size), respectively. This means that if the difference between the two groups' means is less than 0.2 standard deviations, the difference is negligible, even if it is statistically significant with ANOVA (eta^2) analyzed. Table 4 reports that the grand means scores were analyzed with ANOVA (eta^2) that show the effect sizes as small to medium sizes were determined.

Conclusions

Qualitative and quantitative research methods were used to analyze and synthesize the database of the Thai archer. None of Thailand's archery athletes qualified to participate in the competition until the Olympic Games in London, England, in 2012, there was only one archer. Drafting an administrative model and managing archery athletes of the conditions of archery athletes for excellence was created with the EDFR research technique, which was developed by combining EFR (Ethnographic Futures Research) with Delphi methodology and has been improved to be more flexible and appropriate for this research study under the strategy of 20 years, the 6th National Sports Development Plan (2017 - 2021), a sports strategy integration plan and to study the critical factors of creating athletes for excellence. The National Sports Development Plan is a mechanism for the Thai country's sporting achievements; consequently, it is necessary to make a long-term plan for continuing budget support. The operational condition of administration and management of archery athletes for excellence, creating an administrative model and managing archers for excellence consists of 3 strategies: developing archers to achieve greatness, developing professional archery trainers, and the development of personnel related to the management of archery clubs or influential archery clubs. All three strategies are appropriate and can be applied effectively.

According to the factors that make athletes successful, covering nine issues, consisting of the instructor, facilities, sports science, creating the competitive experience, athletes, selection of athletes, administration and management, support and encouragement, and training and practicing assessed the future of archery administration and management to expert archery professional's opinions and thinking with the EDFR research process. The acquired data is analyzed and synthesized. To create the research instruments for the Delphi technique with the closed-ended questionnaire, the 45-item Administration and Management of Archery for Excellence Questionnaire (AMAEQ) consisted of nine scales, namely: Trainer (Tra), Facility (Fac), Sports Science (SSc), Creating Competitive Experience (CCE), Archery Athlete Behaviour (AAB), Selected Archery Athlete (SAA), Administration and Management Strategy (AMS), Supporting and Encouragement (SEn), and Training and Practicing (TPr) scales. Each scale consists of 5 items in five options: Strongly Agree (SA, refers to 5 scoring levels), Agree (Ag, refers to 4 scoring levels), Uncertain (Un, refers to 3 scoring levels), Disagree (Dg, refers to 2 scoring level), and Strongly Disagree (SD, refers to 1 scoring level) (Likert, 1932). At the end of the AMAEQ, an open-ended question of the perceptions and suggestions of the administration and management of archery for excellence subjects in each round was assessed. The well-established approach to answering a research question by identifying a consensus view across subject experts was responded to allow for reflection among participants, who can provide nuance and reconsider their opinion based on the anonymized data and opinions of others for making sense of the Delphi in the first, second, and third rounds. Writing the future drafting of the principal framework to summarize as a result of the research was prepared.

The sample size consisted of 73 professional experts who were involved in the administration and management of archery athletes of the 17 Campus of the Thailand National Sports University, consisting of 28 university administrators, 28 archery trainers, and 17 executive administrators of the higher education institutions who sent teams to participate in the Thailand Archery Championships 2018, and 113 archery athletes who have participated in national archery competitions that schedule planning on October 1, 2019, to September 30, 2020, at the Thailand National Sports University Lampang Campus was modified. The AMAEQ was valid and reliable for each item with the Factor Loading Analysis and Internal Consistency (Cronbach Alpha Reliability) coefficient on nine scales that were analyzed and synthesized in three rounds by the archery professional experts' perceptions were correlated. The results indicate problems in *Training and Practicing*, *Facility, Trainer,* and *Administration and Management Strategy* scales are improved to determine the direction of the strategy to draft the administration and management model of archery excellence. In the

second and the third rounds: the improvement of the 45-item AMAEQ on nine scales revealed that many questions lacked credibility and confidence in the drafting of the administration and management archery athlete for excellence model to the arrangements onto one of the factors in order to be considered important that each item is much more stringent criteria such as a cut-off of 0.70, correlation, significantly. The archery professional experts of their perceptions indicate that the internal consistency (Cronbach alpha reliability) coefficients as $0.491 \leq \alpha \geq 0.758$, for the 1st, $0.633 \leq \alpha \geq 0.814$ for the 2nd rounds (acceptable), and $0.705 \leq \alpha \geq 0.831$ for the 3rd round, which is highly acceptable reliability for each scale.

Comparisons between the grand means (scale means ($\bar{X}$)) of the 1st round and the 2nd round, the 2nd round and the 3rd round, and the 1st round and the 3rd round for the AMAEQ questionnaire. The results indicate that $3.277 < \bar{x} < 3.334$; $3.578 < \bar{x} < 4.036$; and $3.800 < \bar{x} < 4.255$ for the 1st, 2nd, and 3rd rounds, respectively. Most of the grand means that are compared between the 1st and 2nd rounds are significant differences at the .01 levels. Statistically, significant all on nine scales between the 1st and the 3rd rounds and are differentiated ($p < .001$). Regarding the 2nd and the 3rd rounds, four of the nine scales are different, significant at .05 levels with t-test analysis. The effect size (η^2) is a quantitative measure of the magnitude of the experimental effect. The larger the effect size, the stronger the relationship between the two variables' relationships are compared that the $\eta^2 < 0.20$ (small size) and $0.21 < \eta^2 < 0.50$ (medium size) of the databases, respectively.

Discussions

Sports excellence means to be consistent in good character, attitude, quality, and standards. It means to be unapologetically exceptional. Being an athlete of excellence is a continuous process. There is a difference between being a perfectionist and being an athlete of distinction. A perfectionist is one who what's to get it right all the time, which is impossible. At the same time, an athlete of excellence is not afraid to make mistakes but is self-aware and humble enough to identify errors and desires and makes conscious efforts to correct them, which is achievable. An athlete of excellence is a positive influence, a sensitive or empathetic individual, an excellent communicator, and an athlete of excellence lifts others because he knows that he rises when he lifts others (Datey, 2019). Athletic excellence reflects an athlete's (or team's) ability to perform consistently up to one's potential by recruiting and utilizing effectively available resources to match the demands of a task. Personal excellence reflects a high level of ability to function effectively as a human being in and outside sports setting across the life span (Stein, 2018). The mentality of pursuing excellence also positively reinforces behavior and emotion: take a lofty goal, break it down into smaller manageable goals, and focus on incrementally achieving those small goals over time, which gives a fulfillment in the short term and leads to achieving the larger long-term goal (Lombadi, 2018).

Typically, sports are athletic activities requiring skill or physical prowess and often of a competitive nature, such as racing, baseball, tennis, golf, bowling, wrestling, boxing, hunting, fishing, etc. Sport is a particular form of this, especially in the out of doors. Striving for excellence is trying to do a person's best. In sportsmen's role, they must do their best and produce excellent work. This will increase their confidence and esteem and result in praise and other benefits (Kurtus, 2022). The nature of excellence in sports would be the ability to become the world champion of a specific sport. This is achieved through dedication, motivation, practice, athleticism, coaching, and many other factors. Development and maintenance of excellence in sports and exploring the personal and contextual factors associated with excellence in sports contexts. Excellence in sports seems to result from the interaction of different factors, highlighting the individual aspects, including personality characteristics such as persistence and dedication, self-confidence, the spirit of sacrifice, and adaptive perfectionism. Similarly, it seems also relevant to the tremendous emotional diversity experienced by athletes, the use of a diverse repertoire of coping skills, and the importance of processes related to practice and training, among contextual factors, the importance

of specific life experiences and significant people in the lives of athletes (Matos, Cruz, & Almeida, 2017).

Focused on archery athletes in Thailand, the problems that should be improved include the limited number of archery trainers and archery clubs still lacking standard sports equipment for expensive training. Applying sports science principles to develop athletes from ancient knowledge and experiences, athletes participating in ongoing competitions, unable to select archer athletes who meet the characteristics of archer athletes, the identity of the sport Archery is not widespread in society; there is no clear strategy or management style and no direction of the organization. However, most archers practice continuously. Specifying the projects to develop archery athletes consists of a project to recruit archers according to the principles of sports science, a project to develop the potential of archers in practicing according to the principles of sports science, a project to develop psychological fitness for archers to excellence, a project to promote archery athletes to participate in national and international competitions, a project to develop the potential of athletes after the competition based on sports science, and a skill review program Archery techniques and techniques (The World Archery Excellence Centre, 2016).

Strategies for developing archery athletes towards excellence: Information excellence is a person, a talent, or an organization's ability to use information optimally to achieve its competitive advantages. The supply of information excellence means the ability of an information provider (Leslie, Porter & Tanner, 2004). The quality of excelling, possessing good grades in a high degree with a center of excellence (COE or CoE), also called excellence center, is a team, a shared facility, or an entity that provides leadership, best practices, research, support, or training for a focus area. A "center of excellence" in one context may have completely different characteristics from another (George, 2010). Information Excellence strategically leverages information to drive exceptional customer value and experience, creating streamlined processes and resourcing, allowing a unified approach with enterprise-level

management that means the ability of an information provider (sometimes can be viewed as a broadcaster), the interests of its customer information to know best and their related requirements to satisfy optimally. Organizations should quickly see if the correct data is being collected and what other information would allow them to strategize further to access that information (Sopco, 2015).

Strategies for the development of professional archery trainers:Archery is a lifelong, family sport. As the National Governing Body for the Olympic and Paralympics sport of archery has created this model of development that will provide the best opportunity for success for our athletes while keeping them involved in the sport for as long as possible. The researcher team believes that a road map for athletes, parents, coaches and administrators to participate and lead athletes with long-term development in mind. The *Administration and Management Strategies of Archery Athletes for Excellence Model of Thailand* goals: To develop healthy, successful athletes to promote physical literacy, athleticism, and archery development; to enhance participation and enjoyment, to improve athlete retention; to ensure psychosocial development and well-being of participants; to foster talent and competitive success; to promote physical/recreational activity across the lifespan; to guide physical training and conditioning; to aim to prevent archery related injuries; and to appreciate archery as a lifelong sport, if possible.

Strategies for personnel development related to efficient management of archery sports organizations: some problems still cause the development of sports for the country's excellence not to achieve its objectives, as expected, including the results of sports science education. It is generally accepted that "Excellence takes time," especially in the search for athletic talents of children and youth to develop into excellent athletes suitable for their respective categories. That sport comes from a mixture of what is provided by nature, or the "sports gene," which is the genetic code that makes people who are good at sports from birth and an environment that contributes to supporting athletes to be successful, including having the best sports coaches. It is

tasked with finding training styles that drive athletes' passion and influence their motivation to enable them to continue to play sports, practice, and compete until they succeed. Therefore, the National Sports Development Plan is a mechanism for the Thai country's sporting achievements; consequently, it is necessary to make a long-term plan for continuing budget support. The operational condition of administration and management of archery athletes for excellence, creating an administrative model and managing archers for excellence consists of 3 strategies: developing archers to achieve greatness, developing professional archery trainers, and the development of personnel related to the management of archery clubs or influential archery clubs. All three strategies are appropriate and can be applied effectively. This form can be used and has a high probability of success.

Acknowledgment

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