

Kinabalu Geopark: Mountaineering Guide Professional Development and Empowerment

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Abstract

This study examines the Kinabalu Geopark in Malaysia, focusing on the mountaineering activities that occur within this significant natural area. It discusses the critical role of mountaineering guides in ensuring safety and security, as well as their importance in enhancing tourism experiences. The research addresses safety and security issues, infrastructure challenges, and sustainability concerns related to mountaineering. Utilizing secondary qualitative data collection, thematic analysis was employed for data interpretation. The findings reveal that mountaineering guides provide essential knowledge and information regarding the climbing process on Mount Kinabalu, which stands at 4,095 meters, making it one of the highest peaks in Borneo and Malaysia. The study highlights the necessity of structured professional development programs that not only enhance the capabilities of guides but also empower them to assume leadership roles within their communities. By fostering a culture of continuous learning and support, the Kinabalu Geopark can leverage the expertise of its guides to improve visitor experiences and promote responsible tourism practices. Furthermore, the research underscores the socio-economic benefits of investing in guide training, which can lead to increased visitor satisfaction and community engagement. This paper advocates for a comprehensive framework for guide empowerment that aligns with the broader goals of sustainable tourism and conservation, ultimately contributing to the long-term viability of the Kinabalu Geopark and its surrounding communities.

Keywords: Kinabalu Geopark, Mountaineering Guides, Professional Development, Empowerment, Sustainable Tourism

Introduction

The mountaineering guide is considered a high-level expert in the process of mountaineering. Some groups of people or individuals need this expertise to climb mountains properly. Every mountaineer has in-depth knowledge of the climbing process and they know the climatic hazards of mountain areas. The mountaineering guide has helped to give knowledge about different challenges and uncertain climatic conditions that may be faced by climbers in the time of mountain climbing. Kinabalu Geopark is a famous national park in

Malaysia and according to UNESCO Kinabalu is a global geopark (Unesco.org, 2024). Due to a world heritage site, many people have come to climb this mountain and for this reason; a mountaineering guide has become necessary. Nature lover's people and those who have a love for tracking activities have climbed mountains. Mountain climbing needs proper body fitness and gathering knowledge about safety and security has helped in climbing activity. The development of training activities for mountaineering guides has helped to improve natural tourism and it has also helped in the economic development of the country.

The Authority of Kinabalu Mountain has allowed approximately 200 climbers a day and approximately 1400 metres above it has six resting points for night base camp. 200 climbers in the day have indicated that with the climbers many mountaineer guides have also climbed Kinabalu Mountain (Thestar.com, 2024). The authority has given permission to the climbers to take small and essential things so that they can climb the mountain properly without facing the challenges of a load of luggage. The mountaineering guide of Kinabalu Mountain has helped tourists reach the mountain and base camps or rest spots at the proper time. They have given guidance about sign languages that tourists have used at the time of trekking, hiking and walking on the mountain. Different activities related to tourism, such as climbing, hiking, trekking, nature tourism and winter sports have taken place. These kinds of activities need the professional guidance of a mountaineering guide. Different activities have taken place in the mountain and Kinabalu Mountain has focused on hiking and walking activities. Mountain activities have helped to develop tourist attraction and natural tourism has helped to develop the popularity of the place.

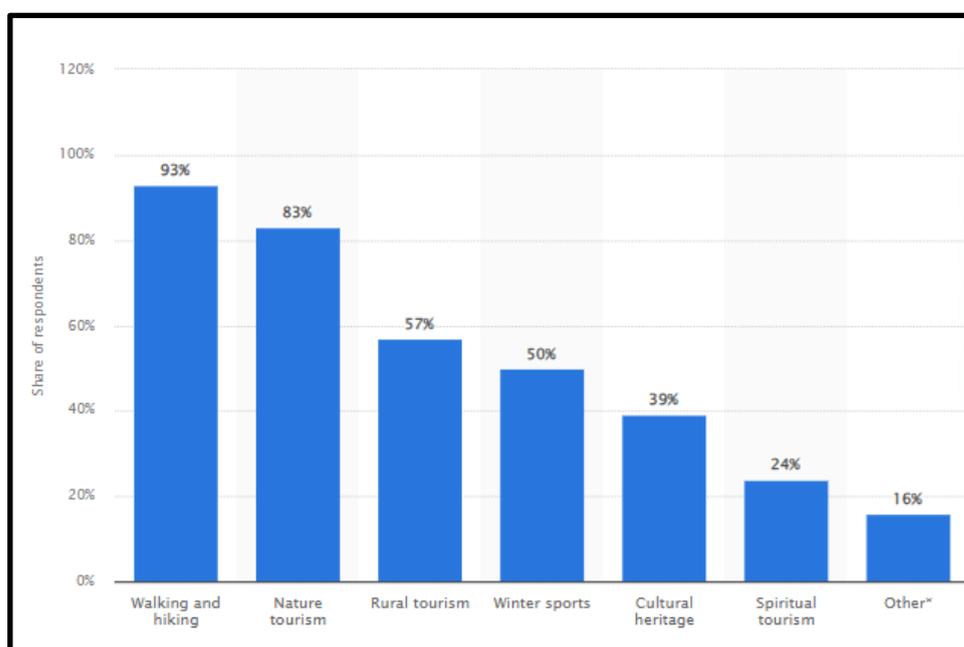


Figure 1: Different activities placed in mountain tourism globally
(Source: Statista.com, 2024)

Empowerment of Kinabalu mountaineering guides has helped to give proper guidance to every climber and several guides may increase their professional skills by using proper professional training and development. Globally 93% of people have reached mountains by hiking and walking and the professional development of mountaineering guides has helped to give efficient guidance (Statista.com, 2024). Kinabalu has not become as popular as other

world heritage sites. Due to this cause: efficient and professional-level guidance of Kinabalu mountaineering guide may help to increase the popularity of this site. Professional training has helped to develop knowledge about the latest protocols of the mountain climbing process and professional development of guides has also helped climbers to avoid risks.

Different types of challenges have been faced by countries in mountain tourism. It can be said that adequate infrastructure for the mountain climbing process has not been reached up to 95 to 100%. Based on December 2022 data 74% of people have said that adequate infrastructure is a challenge for mountaineering activities. 46% of people believe that public-private collaboration was not developed in mountaineering activity and for this cause; mountaineering guides have faced challenges (Statista.com, 2024). Sustainability and connectivity 50 and 48% have indicated that the professional development of mountaineering guides has not been done properly and for this cause: connectivity has not developed properly between mountaineering guides and training-development authority. Safety and security protocols for mountaineers have not been developed properly for this reason 24% of people have said that security and safety protocols have been considered an issue for mountaineering guides (Statista.com, 2024). Proper equipment and protocols are sometimes not used by mountaineering guides and for this cause climbers and guides both have faced challenges. Sustainability issues, lack of security of mountaineering guide infrastructure problems can be considered as challenges of mountaineering activities.

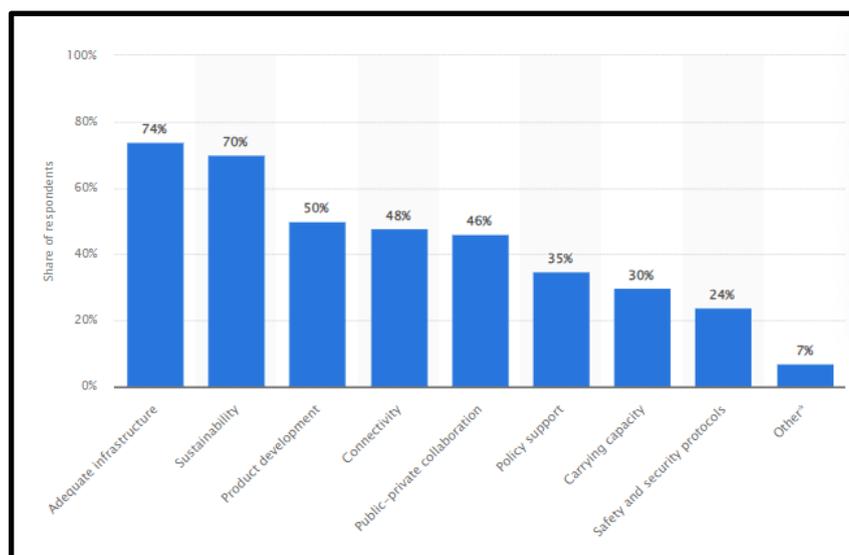


Figure 2: Challenges for promoting and developing mountain tourism globally (Source: Statista.com, 2024)

Lack of safety and security has been observed for mountaineering guides, and as a result, climbers lost their lives. In the year 2022 August, a 51-year-old Malaysian died while climbing Mount Kinabalu (Thestar.com, 2024). The Mountain rescue team was given an alert to the mountain guide. On the other hand, the mountain guide did not rescue the victim and the victim died from a heart attack. This incident has indicated that proper emergency equipment has not been available to the guide that can help to save the lives of victims. Kinabalu Mountain Development Authority has permitted climbing and this authority should focus on safety and security protocols for climbers and mountaineering guides. This authority has to arrange efficient quality training for mountaineering guides so that they can rescue

climbers from any kind of critical situation. Infrastructure has to develop by the mountain authority so that mountaineering guides and climbers do not face extreme critical situations. The training and development have to be developed by Kinabalu Mountain authority which has permitted the climbers (Thestar.com, 2024). The Utilisation of modern equipment for climbing and developed knowledge of reading sign language may help to improve mountaineering guide ideas about these. Campfire and hiking activities have not developed properly in this mountain due to lack of proper infrastructure.

Aims and objectives

- To examine the basic rules and golden rules of mountaineering
- To discuss important factors of mountaineering guide professional development
- To identify different challenges faced by Kinabalu Geopark mountaineering professional development
- To recommend strategies to mitigate identified challenges faced by mountaineering guides

Research Questions

- What are the basic and golden rules of mountaineering?
- What are the important factors of mountaineering guides' professional development?
- What are the challenges faced by Kinabalu Geopark mountaineering professional development?
- What kinds of strategies can help to mitigate identified challenges?

Literature Review

Theoretical Background

Mountaineering guide is an efficient profession that requires both expertise and experience for basic job performance. Different rules and regulations have been focused on by mountaineering guides to ensure the health, security and safety of the mountaineers. As stated by Clivaz & Langenbach (2020), mountaineers have to be conscious of the fact that the destination is much further than it appears. Adverse weather conditions are very common while trekking, hiking and camping in remote mountain areas and the mountain guide has to be prepared with a sufficient supply of essential commodities. As opposed to Ziegler et al. (2023), planning and preparation of the safety measures for tackling the diversities have been the basic requirements for mountaineers. It can be said that another golden rule for mountaineering is that the destination is much taller than it appears.

A mountaineering guide is a professional in mountaineering and the guide has been certified by the local authorities and mountaineering guide associations. The mountain guides are hired to instruct and lead the group of mountaineers for safe and secure mountaineering. As commented by Jackman et al. (2023), Mountaineering is a hard activity and mountaineers and guides have to follow the safety measures and basic rules for a safe adventure. The third golden rule of mountaineering is that the adventure is harder than it looks to the mountaineers. As contradicted by Rasul et al. (2020), extreme weather conditions, falling from high altitudes and like risks have been the most challenging factor for mountaineers. It can be said that these three golden rules have been followed by the mountaineering guide for maintaining safety and security standards in this extremely adventurous sport.

Mountain guides are essential for maintaining the safety and security measures for mountaineers and making them aware of the basic and golden rules for this risky outdoor sport. As commented by Mackenzie & Raymond (2020), technical skills, personal experience and expertise and other relevant activities like rock climbing, and climbing are essential to become a mountaineering guide. Practical experience and frequent training have been the most effective factor for the skill development of mountaineering guides. As argued by Wilson & Da (2023), the lack of incentives and funds has affected the training and professional development of mountaineering guides. It can be said that the government and non-government institutions have developed mountaineering courses for the efficient professional development of the Mountaineering guides.

Leadership skills are important for mountaineering guides as they have to lead the whole team in diverse conditions and weather situations in the mountain region. As opined by Carson et al. (2021), the professional development programs for mountaineering guides have focused on enhancing management skills and risk analysis capabilities. Effective navigation skills and better communication skills are the most important factors for mountaineering guide development programs. As opposed to Gruas et al. (2023), lack of expertise and inferior practical experience among the guides create life risks for the mountaineers. It can be said that skill development regarding the safety and security measures of the mountaineers have been the most potential factors for mountaineering guide professional development.

The mountaineering guide professional development program has been challenged by different internal and external factors that have impacted the efficiency of training and professional development. As opined by Steiger et al. (2022), lack of expertise and knowledge has been the most challenging factor for mountaineering guides and it has impacted negatively on their professional development criteria. Mountaineers are required to carry essential supplies in the high mountain regions to manage and maintain security and safety standards. As contradicted by Adler et al. (2020), efficient training programs have been developed by the government and non-government agencies to enhance the practical skills of mountaineering guides. It can be said that lack of practical knowledge and expertise have been perceived as the most affecting factors among the Kinabalu Geopark mountaineering guides.

Cultural and language barriers have been experienced by the mountaineering guides and it has been a challenge to develop communication effectively. As commented by Sulong et al. (2023), the language barrier is negative for developing a successful training program and maintaining the ultimate skill enhancement criteria of the participants. The lack of sufficient financial resources has been another challenge for the professional development of mountaineering guides. As contrasted by Chohan & Hu (2022), the implementation of advanced communication technology is important to mitigate the language barrier in the training program and develop more opportunities for success. It can be said that lack of proper knowledge regarding the basic rules of mountaineering and inefficient navigation capabilities have been the most challenging factors for mountaineering guide professional development.

The occupation of mountaineering guides is infused with numerous different forms of challenges and concerns regarding the shortage in the supply of required pieces of equipment and lack of economic resources. The technical challenges can be dangerous in certain conditions and can result negatively. However, concerning identified challenges can be mitigated and diminished with the strategic enhancement of equipment, plan and formula. As mentioned by Clivaz & Langenbach (2020), professional development in the field of mountaineering guides can be acknowledged by considering leadership application methods in areas of tourism based on mountaineering. Technical terms of climbing instructions along with correct equipment are to be needed in the field of mountaineering. On the other hand, Mourey et al. (2020) claimed that evaluating mountaineering strategies to adapt to dangerous climate change has to be implemented in the technical training of mountaineering guides. Professional development with training strategies can mitigate the nature of challenges faced by the mountaineering guide professional.

Financial and cultural barriers in the field of mountaineering professionals have also been recorded to obstruct the process of flourishing the opportunity in the tourism section. As per the comment of Schirpke et al. (2020), the conceptualisation of the cultural ecosystem to impact-fully mitigate the cultural conflicts in the mountain regions can be enhanced. The procedure of cultural and language barriers can be mitigated with the application of strategic management. As argued by Rasul et al. (2020), government support and adequate planning are to be measured in the occupation of mountaineering guides. Low capabilities to adapt to future risks in the section of mountaineering guides can be mitigated by financial support to conquer the barriers.

Social cognitive theory has focused on the psychological perspective of the learner for maintaining the skills development and knowledge enhancement in an individual. As opined by Eccles & Wigfield (2020), the social cognitive theory has concentrated on the relationship between the environment, people and their behaviours. Social cognitive theory has been implemented in this study to understand the factors for efficient mountaineering guide training and development programs with professional development perspectives. As argued by Niati et al. (2021), the personal motivation of individuals is important for better skills and competencies development with a professional development program. It can be said that professional development and empowerment of mountaineering guides need personal motivation to improve their skills and competencies.

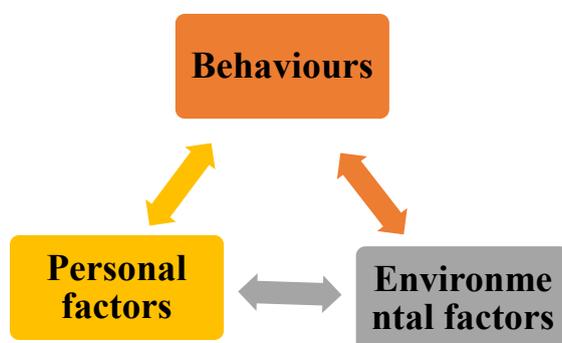


Figure 3: Social cognitive theory
(Source: Self-created)

Professional development and empowerment of mountaineering guides are essential for maintaining the safety and security of mountaineers in their adventures. As opined by Yusliza et al. (2020), the attitude and behaviours of an individual are greatly influenced by external factors. The social cognitive theory has analysed that the personal effectiveness of the mentoring guides is required for better professional development. As opposed to Bragg et al. (2021), internal motivation and encouragement are required to develop skills and competencies through professional development programs. It can be said that expertise and practical experience are essential for the mountaineering guides of Kinabalu Geopark to maintain the basic rules and safety standards for mountaineering.

Previous studies have focused on essential criteria for mountaineering and its challenges ignoring the importance of professional development and empowerment of guides which has created a gap in the study. The aims and objectives of the previous studies were not specific in identifying the challenges and obstacles of mountaineering guides for their professional development and empowerment. The theoretical implementation in previous research has been very inferior and this study has mitigated this research gap by accepting the social cognitive theory. This study has focused on the challenges of lack of expertise and knowledge among the mountaineering guides mitigating the gaps of the previous research.

Methodology

Research philosophy is a scientific approach to constructing the thought and knowledge process that builds the study effectively by using appropriate information. Every form of research field requires the informative guidance of research philosophy. There are three major forms of research philosophy in academia that are positivism, pragmatism and interpretivism philosophy. The constructive approach of the study has been followed with the conceptualisation of the Interpretivism philosophical approach. This form of philosophy enhances the methodologically built assumption in the broader perspective that helps in forming thoughtful analytical interpretations in the social context (Scirp.org, 2024). The research on the development of mountaineering guide professionals has evolved methodologically with the structural guidance of interpretivism philosophy.

A research approach is used in the methodological process of research that enhances the data to analyse and implement in the right direction of the conducted study. In the field of research, there are main three forms of research approaches are used that are the Abductive, Inductive and Deductive research approaches. In the current context, an Inductive form of research has been selected to qualify the study for a broader successful narrative. This form of approach correctly builds the foundation of hypotheses and theory by collecting informative, relative data (Kim, 2021). The empowerment of the mountaineering guide professional has achieved immense help through the formulation of the Inductive research approach.

The thoughtful prosecution of research enhances the structural method of research design that adjoins the components of informative data in a logical pathway. It is a dissertation technique to be infused into the research structure synchronising with its major three forms of Explanatory, Exploratory and descriptive research design methods (Emeritus.org, 2022). Exploratory research design has been applied in the illustrated research

of the developmental process of mountaineering professionals. The compressive tool of inductive research has logically helped construct the foundation of the questions that have not been studied previously.

The data collection process is the utmost crucial step to methodologically follow in the field of research. Research can be methodologically structured by enhancing the correct and thoughtful step of data collection. In the empirical field of academia, the data collection process can be major in qualitative and quantitative data collection followed by primary and secondary ways of data collection. The components of this study have been derived from the social contextual formulation of mountaineering professionals aligning with empowerment. A secondary qualitative data collection has been evident to strongly structure the foundation of the element wise variables of the study. The methodological and analytical approach to correctly evaluate the already existing data source has been implemented while conducting the study. The qualitative data collection method of the secondary approach provides the ground to maximise the existing opportunities and advantages in the process of data collection (Cheong et al. 2023). Depiction of specific required changes has been directed and motivated in the context of gathering the figurative framework of data. However, an attentive consideration regarding contextualising and conceptualising the gathered data has been processed while organising the methodological process of research.

Data analysis is a structural method to enhance and apply the significant collected data in the conducted study to form a proficiently built correct approach to the research. The vivid description, required analysis and fundamental procedure evaluation following the data are important steps of consideration in data analyses (Ori.hhs.gov, 2024). The present research has applied the thematic data analysis to verify the data that has been set in the study. Thematic analysis has enabled the formative field to identify and analyse the existing pattern within the study. Thematic data analysis has thus been enormously helpful in evaluating the correct formulation of the collected data.

Every form of research in academia requires the verification of ethical consideration to qualify for ethically-conducted steps. In this process of formulation of the study, some critical ethical stages have been considered. The Data Protection Act of 2018 has been strictly followed in the study to avoid the steps of academic mishaps. The act is significantly crucial as it consists of the steps of ethically building a code of conduct including avoiding copyright and ensuring data security (Gov.uk, 2024). The paraphrasing method has also been followed to avoid plagiarism and the confidential process of anonymity has also been followed throughout the study.

Results

The mountain environment of Kinabalu has been inherently risky along with the mountaineering guides trained climbers to reduce the risk climbing of the mountain. There is a positive role of mountaineering guides such as taking care of climbers, providing safety and security, achieving goals provide coaching (Mourey et al. 2020). It has been seen that a professional mountaineering guide always holds the IFMGA/ UIAGM certification. Before becoming mountaineering guide the individual had done a large amount of climbing skills for many years. Safety and security have been the essential aspects of climbers (Mackenzie et al. 2020). In the climbing of Kinabalu Mountain, the guides have the ability to navigate the

mountain environment and become familiar with multiple possibilities and problems. Climbers below 16 years old are considered as a child and they need a separate mountaineering guide who can help to climb Kinabalu Mount (Mountkinabalu.com, 2024). Taking care of climbers is the main job role of a mountaineering guide. It has been identified that a mountaineering guide has been building a good connection with a huge amount of people which can help to reduce the inherent risk.

Mountaineering guides have been providing relevant knowledge and information related to the climbing process at Kinabalu Mount. Kinabalu is one of the highest mountains in Borneo and Malaysia that range from 4095 metres (13435ft) which is the third highest peak of an island in the world (Wikitravel.org, 2024). The provided information from the mountaineering guide has been effective during the time of mountain climbing. It has been seen that mountain guides have the ability to provide a climbing experience to their mountaineers in the Kinabalu location. In the presence of a mountain guide, it has been highly required to make a seamless tourism experience. Before starting the climbing mountaineering guides provided information about the various kinds of emergency situation which has occurred.

In the empowerment of Kinabalu Geopark, mountain guides have been affected by financial compensation. The management of Kinabalu Mountain has been taking necessary action so that financial growth has occurred for future growth. Effective training programs are required for mountain guides as they have been able to guide climbers more efficiently (Limper et al. 2020). Lack of financial support has been one of the main reasons for not organising an effective training programme. The provision of training programmes has been helping the guides to increase their knowledge and contribute better services to the guidance of the visitors. Training programs have been helping to increase their climbing skills and they have been able to tackle any kind of emergency situation to build a good reputation for Kinabalu mountaineer guides within the marketplace (Esfandiar et al. 2022). Financial compensation has been helping to make a high amount of safety and security for mountain guides which has been beneficial for them to achieve empowerment.

Insufficient financial compensation has been causing a large amount of issues for climbers to guides. Proper equipment has been required for the mountain guides of Kinabalu mountaineers. It has been found that proper equipment and instruments are highly required for mountain guides while guiding climbers. In the empowerment of mountain guides, it is required to acknowledge expertise for the next level of individuals (Purdie et al. 2020). In the development of climbers' experience, the expertise acknowledged has been highly required for the professional empowerment process. Climbers are more motivated and focused when they get expertise acknowledgement before climbing. Expertise acknowledgement has been helping the climbers to become inspired and successfully climb the mountain (Mackenzie and Raymon, 2020). The location of Kinabalu geopark has been famous for the sustainable tourism activities which have helped to empower their professional development.

There are multiple issues identified in mountain guide professional development as lack of technical knowledge has been one of the biggest issues. Every mountain climber must have the skills and knowledge for survival on top of mental and physical strength, resilience, endurance and cunning (Purdie et al. 2020). Every group mountaineering excursion

mountaineer has the knowledge and information about the route well and awarding climbers of the risks they might encounter during the time of climbing. Based on essential elements of mountaineering knowledge and information are some of the crucial elements of climbing.

There have been some benefits of mountaineering as the most obvious benefits are to becoming fit and having enough knowledge during the climbing. The occurrence of issues has caused multiple difficulties for the mountaineers who have further limited the empowerment and development of mountain guides (Mackenzie & Raymond, 2020). It has been seen that the lack of information and knowledge related to the training procedures has been causing a large amount of difficulty for mountain guides in the development and empowerment of the process. The knowledge that has been required regarding the climbing process has been detrimental towards the empowerment of the development process of the mountain guides.

The mountaineering training guides have faced challenges from lack of expertise and lack of practical knowledge. Efficient training programs are required to develop the skills and competencies of mountaineering guides. The knowledge of navigation and practical skills for maintaining safety and security in mountain regions are the most required skills of a mountaineering guide (Hall & Brown, 2022). The Government and nongovernment incentives are required to develop efficient training and empowerment programs for mountaineering guides. The self-awareness and survival strategies of the mountaineering guides can be improved with the efferent skills and development program and it is required for maintaining the basic rules and regulations of safe mountaineering.

Training can develop practical knowledge and self-confidence of the mountaineering guides and it is essential for mitigating the challenges of lack of expertise. The lack of financial resources has hampered the efficiency of training and development programs (Barry et al. 2023). The mountaineering guides should be concerned about the rules and regulations of mountaineering for the safety measures in this adventurous sport. It can be said that the mountaineering guide's professional development can be efficiently enhanced with training and skill development programs. Skill development programs and training are essential for improving the climbing skills and navigating abilities of mountaineering guides enhancing their skills and knowledge.

Discussion

It has been identified that professional mountaineering guides have been responsible for providing safety and security to the climbers in Kinabalu Geopark. A mountaineering guide has been certified by the authorities of the guide association (Purdie et al. 2020). Mountaineering guides have been hired to lead and instruct the group of mountaineers who are interested in climbing. It has been seen that mountaineering guides have been one of the efficient professions that require both expertise and experience for basic job performance. Multiple emergency situations may occur during the time of climbing (Esfandiar et al. 2022). Adverse weather conditions have been one of the major issues while hiking, trekking and camping in remote mountain areas and the mountain guide has to be ready for a sufficient supply of essential commodities. It has been seen that preparation and planning of the safety measures for tackling the diversities that have been the basic requirements for mountaineers. Extreme weather conditions and falling from high altitudes have been some of the situations

that occurred during the climbing. Mountain guides have been crucial for maintaining security and safety measures for mountaineers and making them aware of the basic rules and regulations for risky outdoor.

The lack of financial resources has affected the training programme negatively impacting the professional development and empowerment of mountaineering guides. It has been seen that non-government and government institutions have been developing mountaineering courses for the climber's development. Leadership skills have been essential for mountaineering guides as they have been the ability to lead the whole team in an emergency situation or any diversification in the mountain region (Purdie et al. 2020). Multiple challenges have been identified in the mountaineering guide for professional development. Lack of expertise and knowledge has been the biggest challenges for mountaineering guides that have been negatively influencing their professional development criteria. It has been shown that effective training programmes and professional development have been effective strategies for tourism based on matching guides. Professional development in the field of mountaineering guides has been acknowledged through the consideration of an effective strategy (Esfandiar et al. 2022). Adequate planning and government support are required to be measured in the occupation of mountaineering guides.

It has been found that skills development programs and training are essential for mitigating the issues of inferior knowledge and practical skills among mountaineering guides. Appropriate training programs can enhance skills and develop self-confidence among individuals with practical knowledge and understanding (Puad & Desa, 2020). Basic knowledge about the safety standards and navigating capability are the most efficient requirements of a mountaineering guide and skill development programs have been effective in developing their capabilities. It has been found that government and non-government agencies have taken different incentives for developing the skills and competencies of the mountaineering guides for maintaining the safety and security of the mountaineers.

Conclusion

Based on the above study it can be concluded that the development and empowerment have been essential aspects for mountaineering guides in Kinabalu Geopark. Mountaineering guides have been responsible for providing training and enough knowledge and information to prepare climbers. There are some basic and golden rules of mountaineering discussed based on the time of climbing in the Kinabalu Geopark. Taking care of climbers along with providing security and safety has been the main role of mountaineering guides. There are some essential factors identified that have been based on the mounting guide in professional development. Mountaineering guides have been providing training of practical experience and frequent training which have been effective factors for developing the skills. Lack of financial resources has affected the training process and professional empowerment and development of mountaineering guides. There are some challenges identified in mountaineering guide professional development such as lack of expertise, lack of equipment and supplies, language and cultural barriers along with insufficient financial resources. Lack of expertise and technical knowledge are the biggest challenges for the mountaineer's guide and it has negatively influenced the professional development criteria. Some strategies have

been discussed to mitigate challenges that have been faced by the mountaineering guides of Kinabalu Geopark.

Theoretical and Contextual Contribution

This research makes a valuable contribution both theoretically and contextually. From a theoretical standpoint, it applies and extends Social Cognitive Theory by demonstrating how personal motivation, environmental context, and behavioural reinforcement interact in the professional development of mountain guides. The study integrates this theory with tourism and outdoor leadership literature, providing a multidimensional understanding of empowerment in high-risk, skill-intensive environments. Contextually, the research offers fresh insights into the underexplored domain of mountaineering tourism in Southeast Asia, particularly within the UNESCO-designated Kinabalu Geopark. By highlighting the structural challenges, safety gaps, and socio-economic opportunities facing mountain guides, the study contributes practical strategies to support sustainable tourism and local community engagement. These findings are significant for policymakers, tourism planners, and educators aiming to enhance tourism workforce development in geoparks and other natural heritage sites.

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