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Who can reach for the Michelin stars? An empirical analysis of human, organizational, and motivational resources

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Abstract

Purpose

Research on the careers of fine-dining chefs is still underrepresented in the hospitality literature. Especially, there is a research gap in quantitative empirical evidence of answering the question of human, organizational, and motivational resources needed to become a top chef. The paper provides answers to the question which factors influence whether a chef will be awarded a Michelin star or not.

Design/methodology/approach

Empirical evidence is given with the help of two quantitative datasets and eleven in-depth qualitative interviews with Michelin star chefs, three sous-chefs and two 'Plate' awarded chefs. The first quantitative dataset encompasses the short CV of all 429 chefs in Germany who received either one, two, or three stars from the Guide Michelin between 2004 and 2019. For the second dataset we conducted a survey with all 309 German star chefs who have been awarded in 2019 and additionally non-awarded chefs.

Findings

The Michelin star awards can be taken as an objective career success measurement. Our analysis shows that chefs who were employed at a hotel or have an investor and/or completed a vocational training at a restaurant with a Michelin star chef are more likely to be awarded a Michelin star. Additionally, our study supports that Michelin stars fulfill different functions. On the one hand, the award measures the objective career success of chefs. On the other hand, it serves as a selective incentive to increase extrinsic motivation.

Originality

Surprising is the result that award-winning and non-awarded chefs are equally highly intrinsically motivated but differentiate in extrinsic motivation. In this case the objective career success measurement and selective incentive coincide.

Practical implications

A practical advice for restaurant or hotel owner and managers is that if they want to start a top restaurant, they should hire a Sous-Chef from a 2- or 3-Michelin star restaurant. And vice

versa, chefs who want to make a career in the fine dining world should apprentice to top chefs who already have star awards.

1. Introduction

In the field of fine dining chefs' career success is measured by awarded Michelin stars. This is the internationally recognized "currency" for success. But which factors influence the probability of Chefs being awarded stars? Studies on the career success of culinary chefs have on the one hand mostly focused on the individual skills of chefs, like Ko (2012) who gives empirical evidence of the professional competence. Additionally, Zopiatis (2010) analysis the technical, culinary-specific competencies and Allen and Mac Con Iomaire (2016) mainly emphasize subjective career success factors such as attitude. Furthermore, Pratten (2003) describes among other things the problem of discipline or Balazs (2002) leadership as a success factor. On the other hand, most of the literature that deals very closely with the success factors of Michelin starred chefs are qualitative (case) studies, like O'Brien (2010), Haddajii *et al.* (2017) or Pratten (2003). Additionally, some research analysis the economic and financial strategy (Johnson *et al.*, 2005).

Under the bottom line, there is a research gap regarding quantitatively measurable factors influencing the career path of chiefs, especially the organizational and motivational resources on the career success of chefs. We define career success here as being awarded a Michelin star. Therefore, our research question is: *Which human, organizational, and motivational resources influence whether a chef will be awarded Michelin stars or not?*

Our theoretical framework is the career success theory. Career success is defined as "the real or perceived achievements individuals have accumulated as a result of their work experiences" (Judge, Higgins, Thoresen, & Barrik, 1999, p. 622). We will focus on factors that influence the real, objective career success (Dries *et al.*, 2008).

To answer this research question, our article begins with an introduction to the world of Michelin stars, followed by a brief overview of the state of research on careers in fine dining, in order to derive hypotheses for empirical testing. We use two quantitative databases: For the first, we collected information on all 429 chefs in Germany who received awards between 2004 and 2019. The second one is an online survey targeting all 309 German Michelin star chefs who were awarded a Michelin star in 2019. Additionally, we conducted an in-depth qualitative

study includes interviews with 11 Michelin starred chefs, three Sous-Chefs who work in Michelin star restaurants and two 'Plate' awarded chefs. After the presentation and theoretical reflection of the results of our analyses, our article concludes with a discussion, practical implications, limitations, and avenues for further research.

2. The World of Michelin stars

Restaurant guides can only function if all parties involved consider the verdict to be credible and legitimate. Therefore, a core challenge for all restaurant guides is to build credibility (Lane, 2014, p. 287; Surlement and Johnson, 2005). Among all awards and rankings, the Michelin star award is the most recognized award among chefs, restaurant owners, service personnel, guests, and media. The reasons for that are at least twofold: (1) Up to now, the Michelin Guide is financed by the tire manufacturer Michelin. It is thus independent and does not have to tie its judgement and ranking to any economic considerations. (2) The evaluation of the restaurants is professional because only full-time inspectors and not interested laymen participate. Usually, the inspectors of the Guide Michelin are former chefs who know the industry and the techniques used very well. Currently, 12 full-time inspectors are working for the German Michelin Guide (authors, 2020). Professional competence is the prerequisite for the inspectors' credibility. For that reason, the judgement is socially accepted by all. From a theoretical point of view, the Michelin award indicates the excellence and expertise of the chefs and functions as a signaling mechanism (Surlemont and Johnson, 2005; Johnson *et al.*, 2005; Harrison and Jeppson, 2015). Chefs, restaurant owner, service personnel as well as guests trust the Guide Michelin and act accordingly. The result is a high level of effectiveness because the Guide is established as a social institution.

Originally, the Michelin star classification served to make drivers stop at one star, make a detour at two stars, and select the restaurant as a single destination at three stars (Michelin Guide, 2020). In the meantime, two further categories have been added below the stars, as a criticism of the exclusivity of the stars has been voiced in recent years: the first is the »Bib Gourmand« category, which indicates a particularly good price-performance ratio. The second is the category of the "Michelin plate". It addresses potential candidates for the first star and has been introduced as an additional category. The stars are not awarded automatically but must be defended each year. Taking a closer look at the development in Germany, we can observe, that fine dining has known only one direction in recent years: It has been steadily on the

rise. Especially in the last 15 years, the number of 1 and 2 Michelin star restaurants awarded in the Guide Michelin has tripled on average and the number of 3 Michelin star restaurants has doubled (see figure 1).

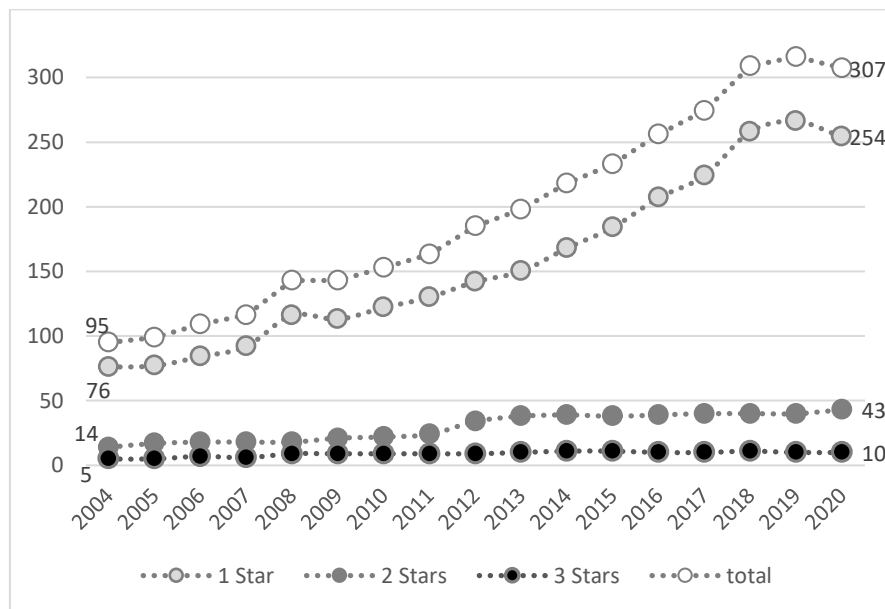


Fig. 1: Development of the number of star restaurants in Germany (own representation)

The figure shows that the increase is particularly noticeable in the 1-star range. In the top 2- and 3-star range, the group remains relatively small. All in all, the stars are awarded very cautiously and conservatively to minimize type II errors, i. e. the avoidance of selecting a restaurant that should not have been selected (Surlement and Johnson, 2005). This leads to the fact that the award is highly appreciated and accepted as well, it is a reliable source for the external attribution of success for top chefs worldwide. Therefore, our research question is, how and why do some chefs reach for the stars more easily than others? Before answering this question with the help of our data, we will briefly introduce different career types of chefs.

3. Career types of chefs

Looking at the career paths of professional chefs, there is no getting away from the organizational structure that Escoffier has introduced into the world of kitchens. In order to make the work in the kitchen more effective, he did not only introduce modern cooking methods but also divided the kitchen into different stations. These positions were filled in hierarchical gradations with specialized cooks who were assigned to clearly defined areas of responsibility and

produced individual components for the dishes. In this respect, his organizational considerations can also be interpreted as an adoption of new manufacturing ideas during the industrialization and hierarchical structures. The hierarchical structure could lead to the assumption that careers in the kitchen hierarchy are aligned according to the traditional career as a structured “sequence of positions” (Super and Hall, 1978, p. 334) within the organization. This was a typical career pattern until the 1970s (Fine, 1996). In the early 1970s, the famous 3-starred Michelin chef Paul Bocuse encouraged cooks to leave the restaurant to pursue a more entrepreneurial career by taking over a restaurant and thus developing their own culinary style. Today in the hospitality industry in Germany the fluctuation rate has remained constantly at around 65 percent in recent years (35 percent on average throughout all industries) (Statistics of the Federal Employment Agency, 2019, p. 142). Some employees leave the branch completely, others move to other restaurants to take the next step in their careers (Pratten, 2003). If the career can no longer be objectively measured as a climb up the hierarchy, a different evaluation system is needed that measures career progress. This is precisely the gap that the Michelin star award fills. Careers are no longer tied to a single organization, which is why they are referred to in the literature as boundaryless careers (Harrison and Jepsen, 2015, p. 22). Another type of career is the so-called protean career type (Hall, 2004). Since protean behavior is correlated with job and organizational mobility, the concept is quite close to the idea of boundaryless careers but linked to subjective success criteria and individual core values of freedom and growth (Hall, 2004, p. 4). The career of non-rewarded chefs could be characterized as boundaryless where rewarded chefs follow more a protean career concept because they feel committed only to themselves and only follow individual values.

In research, sometimes the career of chefs is measured by the number of awarded Michelin stars, but this kind of studies are mostly linked to individual attitudes and skills (e.g., Balazs, 2002; Pratten, 2003; Dornenburg and Page, 2003; Lane, 2014; Allen and Mac Con Iomaire, 2016, 2017). Pratten (2003), for example, not only gives reasons why so many people leave the hospitality industry (bad working conditions, poor pay etc.), but also mentions the individual skills required to be a top chef, namely management skills. Balazs (2002) investigated three-star Michelin chefs in France and found that they are extremely charismatic. They also attract the loyalty within their team, which is willing to work long hours, quite often for little or no pay in order to feel that they are part of something special. Moreover, Zopiates (2010) found that apart from leadership-management competencies and creative competencies, culinary-

specific technical competencies are most important. Ottanbacher and Harrington (2007) analyzed the innovation processes of chefs and their employees' skills. Other research analyzes the relationship between awarded stars and economic success (Johnson *et al.*, 2005. Surlemont *et al.* (2005) show that a core business revenue strategy leads to higher star rating, but lower profitability. There are few findings on the correlation between networks of chefs and career success like in the study of Aubke (2014), who conducted a network analysis of German Michelin-starred chefs. He showed the influences and centralist of a handful of chefs who have formed their own groups and traditions. Up to now, there is hardly any research that answer the question on a quantitative basis who will become one of the most renowned chefs in the world and why by taking a closer look at human, organizational, and motivational resources.

In the following, we will distinguish the difference between objective and subjective perception of career success in the field of fine dining to derive hypotheses for our study.

4. Objective vs. subjective career success

Since the 1970s, career success has been a central research topic in management and applied psychology. A widely accepted differentiation of careers is the distinction between objective career success versus subjective career success (Spurk *et al.*, 2019; Abele *et al.*, 2011). While subjective career success is measured in terms of satisfaction and therefore not visible to third parties, objective career success is directly measurable by the achievement of higher occupational status in a company, the level of salary, or awards and therefore visible to third parties (Dries *et al.*, 2008).

So far, there is a research gap in understanding the objective professional success of culinary chefs. Our research aims to fill this gap by measuring the objective career success with the help of the stars awarded by the Guide Michelin. Since the Michelin star rating is relatively reliable as shown above, we have chosen the award as an objective factor. A further argument is the very high status that this award enjoys among chefs. In contrast to salaries and bonuses, awards are normally no selective incentives because very often there is no linear relationship between effort and reward. As Frey and Neckermann (2008) stress in the case of scientific awards: The winner takes it all and the second best gets nothing. The Nobel Prize is awarded mostly to only one or two persons (or to a maximum of five persons) and there are no

gradations of achievement. However, there is a huge difference between a scientific award and the Michelin stars. First, the Michelin star awards have an ordinate order (three stars are better than two stars, two stars are better than one star). Second, there is no limited number of awards so that hypothetically an unlimited group of persons and restaurants can receive this award.

In 2020 a total of 10 chefs were awarded 3 Michelin stars, 43 chefs received 2 Michelin stars and 254 chefs received 1 Michelin star for their restaurants in Germany. In this sense, Michelin stars represent an expression of objective career success. We will now focus on the factors that influence the objective career success of chefs as measured by obtaining one or more Michelin stars.

5. Influencing factors on the objective career success of fine dining chefs

For our theoretical underpinning, we try to identify personal and organizational resources that influence objective career success. As we know from the meta-analysis of Ng *et al.* (2005) personal resources, i.e., human capital, are important for objective career success. This is also true for the gastronomy sector. Therefore, we will start with the educational background as a form of human capital.

5.1 Vocational training as a human resource

From educational sociology and inequality research we know that education is an important factor that influence social advancement (Tomaszewski *et al.*, 2017). In contrast to other countries (Allen and Mac Con Iomaire, 2016; Zopiatis, 2010), most chef and cooks in Germany, Austria, and Switzerland undergo a triannual vocational training after completing a minimum of nine years of compulsory schooling. However, the profession of cooks—in contrast to the medical profession, for example—is not protected and the vocational training is not compulsory.

Nevertheless, Cooper *et al.* (2017) emphasize the importance of occupational identity and culture in the socialization process of Michelin-starred chefs. Additionally, Ko (2012) highlights that senior chefs help forthcoming chefs not only to create delicious dishes on a high-quality level but also to plan career paths.

However, only a few top restaurants in Germany train their staff in form of vocational training. Especially at the level of 2 or 3 Michelin star restaurants, there is no time and space for vocational training. The chefs argue that the products used are so expensive that cutting exercises cannot be trained on a Wagyu, for example (authors, 2020). For this reason, 2 or 3 Michelin star restaurants mostly employ only trained cooks who completed their vocational training in less prestigious restaurants. The most likely option is to become an apprentice in a 1 Michelin star restaurant. Therefore, our first hypothesis is:

[H1] Vocational training at a restaurant with a Michelin star chef increases the probability to be awarded more than one Michelin star.

Another important way to learn from top chefs is to do an internship there or to have worked there for some time. However, as will be shown below, this variable does not differentiate, as almost all awarded chefs have completed such an internship in their CV.

5.2 Type of employment as an organizational resource

Not only human but also organizational resources are relevant for objective career success (Johnson *et al.*, 2005). In Germany, for example in comparison to Great Britain, a lot of fine dining restaurants are located in hotels or are owned by hotels (Lane, 2014, p. 49). Hotels, for example, want to attract guests via well-known chefs, as they then not only go out to eat, but also stay overnight in the hotel. Some hotel companies, like the Althoff Collection, call themselves “the fine dining destination”¹. In this case, Michelin star restaurants are part of the strategic orientation of the hotels and chefs are employed by the hotels. This makes a big financial difference: luxury hotels can provide a much better equipped restaurant space than self-employed chefs can ever afford. In addition, they can subsidize the running costs. Therefore, another important independent factor to explain the promotion is the employment status, i.e., whether the chefs are employed by a hotel or investor or if they are self-employed. From these considerations follows our second hypothesis:

[H2] Chefs employed at a hotel or who have an investor have a higher probability to be awarded more than one Michelin star than self-employed chefs.

In addition to both factors, there are also motivational prerequisites that determine whether

¹ <https://www.althoffcollection.com/en/about-us>

a chef makes it to the top or not, which we will now discuss.

5.3 Motivational resources

One of the most important influencing factors for career success in hospitality is motivation (Zopiates and Constanti, 2007; Cesário *et al.*, 2017). In recent years, one theory of motivation is very prominent in scientific research, the Self-Determination Theory (SDT) of Ryan and Deci (2000, 2020). The influence of motivation, theoretically based on SDT, on objective career success has rarely been analyzed (Zhou *et al.*, 2016).

The SDT postulates a continuum with three main forms of motivation: Amotivation, extrinsic motivation, and intrinsic motivation, whereby the extrinsic motivation is differentiated into different types of regulatory styles. A person can be extrinsically and intrinsically motivated at the same time, but in different ways. Since every work process involves different sub-actions (creative development of new dishes or negotiations with suppliers), one sub-action can be intrinsically motivated and the other extrinsically motivated. Another important basic idea behind the theory is the connection between motivation and the perception of self-determination. If the work situation, on the one hand, is perceived as completely externally determined, i.e., the person only has to carry out actions that are given to him or her in small parts, then it is extremely likely that he or she is only externally motivated. If the work situation, on the other hand, is seen as very strongly self-determined, then this results in a high intrinsic motivation. The kitchen chefs should therefore probably be more intrinsically motivated. This is because a high degree of self-determination requires three factors: (1) The acting person perceives himself as competent in the matter. This can of course be assumed in the case of awarded chefs. All of them belong to the cooking elite. (2) They enjoy a high degree of autonomy. This point is also fulfilled, as the chefs always create the menu themselves. They create wonderful works of art on the plate. (3) The persons feel they belong to a group relevant to the field of action and share its social norms (Ryan and Deci, 2020). In an overview article Ryan and Deci (2020) stress that all research results support the correlation between perceived autonomy and intrinsic motivation. The highly probable perception of the best chefs as high autonomy, high competence and highly committed to a social norm of chefs leads to the third hypothesis:

[H3a] The more intrinsically motivated chefs are, the more likely they are to be awarded

a Michelin star.

Nevertheless, according to SDT the chefs could also be intrinsically and extrinsically motivated at the same time. Chefs could perceive the Michelin awards as selective incentive, especially if they are not intrinsically motivated for that specific sub-action they have to do. This case is summarized with the following hypothesis:

[H3b] The more extrinsically motivated chefs are, the more likely they are to be awarded a Michelin star.

5.4 Control variables

Gender

Gender is an important role attribution in hospitality caused by a special culture in the kitchens (Fine, 1996): First, the language respectively the entire culture in the kitchen is very rough, and vulgar language was common in the past. Second, many complain about the working hours as described above. Pratten (2003) summarizes the absence of female chefs with bad working conditions, sexism, anti-social hours, and poor pay. Like in other branches, we find a glass ceiling effect in fine dining kitchens (Barreto *et al.*, 2009). The Michelin starred cuisine is still dominated by men and gender inequality in career success persists (Frear *et al.*, 2019). Therefore, a typical characteristic of star cuisine is the gender distribution to the detriment of female chefs (Garrigos *et al.*, 2019; Haddaji *et al.*, 2017) and will be controlled in our analyses.

Age

Stars do not fall from the sky. To get to the top, a long and rocky road must be travelled. All chefs have to gain experience to climb up the career ladder in the Michelin star universe. For this reason, it is not surprising that the third Michelin star was awarded to today's 3-star chefs in Germany at an average age of 37.7 years (authors, 2020) and therefore we also control age in our analyses.

Loss of award

The path on the career ladder does not always lead upwards. Sometimes detours or setbacks have to be faced. To control different types of career paths we use the variable 'loss of the Michelin star award'.

6. Methods and data collection

We use two quantitative datasets and in-depth qualitative interviews to answer our research question. The first dataset is a self-created non-responsive quantitative data set which includes all Michelin starred chefs with their professional stations and other demographic data with the help of online available data. The second quantitative dataset consist of an online-survey with all Michelin awarded chefs from the year 2019 and chefs of non-awarded restaurants. Additionally, we conducted in-depth interviews to understand the chefs' perspective better.

The interviews for our qualitative study took place in the year 2018 and 2019. We used a semi-structured interview guide to compare the answers to key questions and at the same time to be open enough to aspects coming from our field of research. In our interview sample, the 2- and 3-star chefs are over-represented (tab. 1). We made this choice intentionally because we were interested in their experiences and approaches to Michelin star gastronomy. We also conducted two interviews with chefs who have received a "plate" award but not (yet) a star, to explore the views of aspiring chefs on Michelin star gastronomy. Additionally, we interviewed three Sous-Chefs working at Michelin starred restaurants. All the chefs we asked agreed to be interviewed, so we were able to realize our sample without any problems.

Interviewees	Number of Interviews
Chefs awarded 3 Michelin stars	4
Chefs awarded 2 Michelin stars	4
Chefs awarded 1 Michelin star	3
Chefs awarded the »Plate«	2
Sous-Chefs working at Michelin star restaurants	3

Tab. 1: Overview of the sample of interviewees (QUAL 1)

The interview guide we used included, among other topics, questions about their own biography and motivation. All interviews were transcribed and analyzed by a qualitative content

analysis according to (Mayring, 2014). We will report the findings of our interview study parallel to the results of the quantitative surveys.

With the help of the first quantitative data set, we aim to analyze the human and organizational resources for hypotheses 1 and 2. We received a list of all German star chefs from the Guide Michelin Germany, to which we added information about their CVs, as they can be found online. In the end, we created a database of all 429 chefs in Germany who received either one, two, or three stars from the Guide Michelin between 2004 and 2019. The database contains a total of 3,122 entries, which also includes information about the place of training or internship, year of birth, gender, school leaving certificate, employment status (self-employed or employed), and possible star wins or star losses.

The motivational resources mentioned in H3a and H3b, which could be relevant for understanding the way to the top, were measured with a second data set. Based on the analyses of our first two studies, we conducted a survey with all 309 German star chefs who have been awarded in 2019. We took their names from the first data set and launched a German-wide online survey in spring 2020. A total of 68 Michelin starred chefs completed our questionnaire. This represents a considerable response rate of 22 %. In parallel, we also took a closer look at non-starred chefs to compare their motive with the externally awarded chefs by distributing an open online-survey via social media channels². After the adjustment of this raw data set, the sample contained data of 80 non-awarded chefs. For the further analyses, we matched the data from both surveys, so that 148 chefs are included in total. Table 2 shows the distribution of awarded and non-awarded chefs.

	not listed	Bib Gourmand Award	"Plate" Award	1 Michelin star	2 Michelin stars	3 Michelin stars	Σ
Chefs	58	12	6	58	13	1	148

Tab. 2: Overview of the sample (QUAN 2)

²We received support by a popular German fine dining blog the newsletter and social media channels of two newspapers and magazines for entrepreneurs and managers in the restaurant and hotel industry.

6.1 Measurement

Dependent variable

The dependent variable in both data sets were the yearly awarded stars by the Guide Michelin. For each person we codified 1, 2, or 3-stars in the first dataset and additionally Plate award, Bib Gourmand award, or no award at the second data set.

Vocational training and type of employment as human and organizational resources

For H1, we analyzed all CVs of awarded chefs that are available on the Internet and created a variable in our data set that marks whether a chef has completed vocational training at a star chef, or vocational training but not at a restaurant with a Michelin star chef, or has accomplished no vocational training at all. A first descriptive analysis of the data confirms the assumption of H1: Chefs, awarded 3-stars have more often already completed their training in a Michelin star restaurant than chefs with 1 or 2-stars (tab. 3).

	vocational training at a Michelin star chef	vocational training	no vocational training at all
1-star	23.3 %	75.8 %	1.8 %
2-stars	23.8 %	71.5 %	4.7 %
3-stars	27.7 %	72.3 %	0.0 %

Tab. 3: Vocational training from Michelin star awarded chefs (own calculation)

Nearly all chefs in the field of fine dining have passed a vocational training as a cook. In this sense, the professional background can already be seen as an important prerequisite for getting to the top. As mentioned above, another important chance is to learn from top chefs, to do an internship there, or to have worked there for some time. As shown in table 4, over 90% of all 3-star Michelin chefs have at least gained some experience during their previous career by doing an internship with a star chef or working for a star chef. Since this is common to all star chefs, however, this variable has no variance and is therefore excluded from further analysis.

	Michelin star experience (worked for or internship by a star chef)	No Michelin star experience in former times
1-star	86.6 %	13.4 %
2-stars	81.5 %	18.5 %
3-stars	90.1 %	9.9 %

Tab. 4: Percentage chefs with or without internship at a Michelin starred chef (own calculation)

To test H2, we created a variable that indicates whether the chefs are self-employed or employed. A first bivariate evaluation also supports the assumption of H2 (tab. 5): 2 or 3 Michelin star restaurants are owned by a hotel or an investor in more than 60 % of all cases. In order to reach the top, chefs need financial resources, which they often only obtain from business partners or hotels.

	employed (i. e. hotel)	self-employed
1-star	44.0 %	56.0 %
2-stars	62.4 %	37.6 %
3-stars	62.4 %	37.6 %

Tab. 5: Percentage of employed vs. self-employed chefs (own calculation)

6.2 Control variables

Gender

For gender, we have created a dichotomous variable with male or female in our first data set. A first bivariate analysis shows that only 2.7% of women were awarded 1 Michelin star over the period, only 1.5% were awarded 2 Michelin stars (in 2019 there was only one female in this category: Douce Steiner and her restaurant "Hirschen"), and currently, no woman in Germany obtains 3 Michelin stars (tab. 6).

	male	female
1-star	97.3 %	2.7 %
2-stars	98.5 %	1.5 %
3-stars	100 %	0.0 %

Tab. 6: Percentage of women among award-winning chefs (own calculation)

Age

For the age, we have created a variable that indicates the age of the chefs in 2020. A first bivariate evaluation confirms our first assumption. With increasing age, the probability of being

awarded Michelin stars increases. The average age of 1 Michelin star is 42.0 years, 2 Michelin stars 45.8 years, and 3 Michelin stars 48.0 years.

Loss of award

We have operationalized different paths of careers with the loss of the Michelin star award. There are — more or less — three different reasons why a chef can lose the award: First, the closure of the restaurant because the award is only given in the combination chef plus restaurant. If one of the two components are missing, the award is automatically withdrawn for the chef. The restaurant will be listed until the new issue of the restaurant guide will be published. Second, the revocation of the award by the Guide Michelin in the new issue, because the quality was declining during the testing period. Third, accident or severe illness of the chef, so that she or he is not able to cook and lead the kitchen any longer. In table 7 the numbers of all cases between 2004 and 2019 are listed. Revocations by the Guide Michelin because of decreasing quality are very seldom.

	closure of the restaurant	revocation of the award	accident/illness
	N	N	N
1-star	30	3	1
2-stars	16	3	1
3-stars	2	0	0

Tab. 7: Number and reasons of Michelin star losses (own calculation)

6.3 Motivational resources

The data basis for testing H3 is the second quantitative study. We have adjusted reliable and valid items from previous surveys to our context (authors, 2014). All items are measured on a 5-point Likert scale from 1 (low) to 5 (high). Amotivation was measured by two items with α .78 (“I don't know, sometimes I don't see the real point of working in the kitchen. In view of the unacceptable working conditions in the kitchen, I don't even know why I do this.”). Extrinsic motivation has been operationalized via the special feature of star awarding (“I cook because I would like to be awarded a star in the Guide Michelin or hold the award.”). Additionally, intrinsic motivation was measured with two items and a reliability of α .68 (“I cook for pleasure. I enjoy cooking.”). Furthermore, we added the before-mentioned control variables of age and gender.

For a bivariate test of the assumption behind hypothesis 3, we carried out an average comparison of the three types of motivation between starred and non-starred chefs, which shows only a significant difference in amotivation and extrinsic motivation. Michelin star chefs are less amotivated and more extrinsically motivated in comparison to non-star chefs.

The mean values are more or less the same for intrinsic motivation between Michelin star and non-star chefs. For intrinsic motivation, the mean value of 4.68 or 4.66 is quite high (tab. 8). Intrinsic motivation is a basic individual prerequisite for being a passionate chef.

		N	mean
amotivation	star chefs	65	1.55**
	non-star chefs	61	2.02**
extrinsic motivation	star chefs	65	3.69**
	non-star chefs	61	2.66**
intrinsic motivation	star chefs	65	4.68
	non-star chefs	60	4.66
**=1 % significance level, *=5 % significance level			

Tab. 8: Mean values of motivational forms in comparison (own calculation)

We will now present our multivariate results according to H1 and H2 and the motivational factor (H3a and H3b). We combine the presentation of our quantitative findings with the results of the qualitative content analysis.

7. Empirical findings

7.1 Human and organizational resources

To test our hypotheses 1 and 2, we calculated two different regression analyses: First, an ordinal regression analysis that calculated the chance of getting 1, 2, or 3 Michelin stars (tab. 9). Second, a logistic regression indicating the transition probability from 1 Michelin star on one side to 2 or 3 Michelin stars on the other (tab. 10). Overall, it can be seen that the threshold between 1 Michelin star on the one hand and 2 or 3 Michelin stars on the other hand is particularly high.

	1-star AME	2-stars AME	3-stars AME
H1 vocational training (1=vocational training by a star chef, 0=no vocational training by star)	-.09*	.07*	.03*
H2 employment status (1= employed /member of hotel, 0=self-employed)	-.16**	.11**	.04**
Control variables			
gender (1=female, 0=male)	.15	-.11	-.04
age	-.008**	.006**	.002**
loss of award (1=star award lost, 0=no star award lost)	-.11	.08	.03
N	334	334	334
Nagelkerke	.132		
Cox und Snell	.09		
** = 1 % significance level, * = 5 % significance level			

Tab. 9: Ordinal regression: influences on the chance of getting one, two or three stars

	2 or 3-star chefs AME
H1 vocational training (1=vocational training by a star chef, 0=no vocational training by star)	.089*
H2 employment status (1= employed/member of hotel, 0=self-employed)	.142**
Control variables	
gender (1=female, 0=male)	-.148
age	.008**
loss of award (1=star award lost, 0=no star award lost)	.063
N	364
Nagelkerke	.127
Cox und Snell	.08
**=1 % significance level, *=5 % significance level, '=10 % significance level	

Tab. 10: Logistic regression: factors that influence the probability of going from one star to two or three stars

Our first hypotheses (H1: *Vocational training at a restaurant with a Michelin star chef increases the probability to be awarded more than one Michelin star*) is supported. Those who have completed an apprenticeship (i.e., they learn from scratch, not just an internship) with a star chef increase the chance of receiving the second star by 7 percentage points and the third star by 3 percentage points (tab. 9). Putting these two categories together, i.e., 1- and 2- and 3- Michelin starred chefs on the one hand and all others without awards on the other, shows that training with a Michelin star chef increases the probability of getting into the higher star category by 8.9 percentage points (tab. 10).

We also find empirical evidence for our second hypothesis (H2: *Chefs employed at a hotel or who gave an investor have a higher probability to be awarded more than one Michelin star than a self-employed chef*). Being employed by a hotel increases the probability of receiving the second star by 11 percentage points and the third star by 4 percentage points (tab. 9). In the logistic regression is shown that an employment, in contrast to self-employment, increases the probability of getting into the 2- or 3-star chef category by 14.2 percentage points (tab. 10). Our qualitative data lively illustrates why this is the case: One of the interviews took place in the restaurant, which is part of a Grand Hotel. The table where we interviewed the chef in the restaurant was located below an original painting by Gerhard Richter, the walls were decorated with silver foliage and other original paintings were hanging at the wall (e.g., Ferdinand Hodler, Salvador Dalí). In this respect, the entire hotel is an image of what one imagines a Grand Hotel to be – everything is only of the finest. The restaurant is part of the hotel and the chef himself is employed there, which in his opinion has many advantages: *"One advantage is this restaurant room we are sitting in, which no one can afford. Unless you get into debt for your whole life. [...] The same applies to the whole operation, starting with payroll accounting, normal bookkeeping, goods receiving, engineering, i.e., when I call craftsmen, right through to the marketing and PR department"* (2-star chef). Not only for this reason most German 3 Michelin star restaurants are owned by hotels or hotel chains.

Regarding our first control variable gender, the AME is not significant but the effect strength points in the predicted direction. The fact of being a woman reduces the probability of getting a second (-11 percentage points) or third Michelin star (-4 percentage points). In the logistic regression, the gender variable reduces the probability by 14.8 percentage points whether a woman receives the highest award. However, gender has no significant influence on the probability of receiving two or three stars in the calculations. This is probably due to the small number of cases.

Our second control variable age has a significant effect on the objective career success. It can be shown how high the probability is of receiving two or three stars based on the individual influencing factors. With every year the probability of receiving a second star increases by 0.6 percentage points and that of receiving a third star by 0.2 percentage points. In the logistic regression, age increases the probability of being awarded 2 or 3 Michelin stars by 8.8 percentage points. The last control variable regarding the loss of an award has no explanatory power.

7.2 Motivational resources

For answering the role of the chefs' motivation as a subjective aspect for career success, we calculated a logistic regression that estimates the transition from a non-star chef to an awarded chef of one or more stars (tab. 11). The threshold in this regression is not between the awarded number of stars like the regression above, but if a chef is awarded or not awarded at all with stars.

	star chefs AME
amotivation	-.151**
extrinsic motivation	.127**
intrinsic motivation	-.141'
age	.011**
gender	-.268'
N	126
Nagelkerke	.340
Cox und Snell	.255
**=1 % significance level, *=5 % significance level, '=10 % significance level	

Tab. 11: Logistic regression: motivation types that influence the probability of being awarded a Michelin star

The first part of the third hypothesis (*H3a: The more intrinsically motivated chefs are, the more likely they are to be awarded a Michelin star*) has to be rejected. In line with the SDT, we found evidence that amotivation represents a significant 10 percentage points reduction in the probability of becoming a star chef. However, our hypothesis (*H3b: The more extrinsically motivated chefs are, the more likely they are to be awarded a Michelin star*) is supported with a significant influence of 11.1 percentage points. Intrinsic motivation has no influence since Michelin star chefs and non-star chefs do not differ in these dimensions. They are all very high intrinsically motivated. All 3-star chefs, those who have made it to the top, always see themselves as highly intrinsically motivated. *"I wanted to do my thing, by hook or by crook, and then it's good to see that it is successful, that it grows, that you can inspire others to do it"* (3-star chef). The absolute top chefs consistently describe their motivation as coming out of themselves, as having fun at work and enjoying the perfect plate. *"Well, first of all, I enjoy it. I don't see it as top performance, but as a challenge for me"* (3-star chef).

It is important to stress that the results of our qualitative study support that Michelin stars actually work in two directions: The stars measure the objective career success of chefs and

are simultaneously selective incentives. All interviewees referred to the Guide Michelin as the gold standard. The Guide Michelin was described in the interviews as *"the measure of all things"* (3-star chef), as *"the Bible, the Oscars"* (3-star chef). The interviewed chefs added that there is *"nothing higher in the international ranking than the Guide Michelin"* (2 Michelin star chef). Moreover, *"a star brings the most prestige"* (chef with a plate award). A chef described the fame of the stars as follows: *"Wherever you are in the world, if you say that you have been awarded a Michelin star, anyone knows this award and appreciates the culinary performance. It is the world's leading currency in fine dining"* (1 Michelin star chef).

At the same time, the award functions as a selective incentive to the chefs and their teams. One of the interviewed chefs describes the effect of the expected, but not yet achieved star for the team: *"There is this red badge at the front of the restaurant and when they come to work, they all get a grin like this and know what they're doing it for"* (chef with a plate award). In one case even the Sous-Chef tattooed the Michelin star on his arm when the restaurant was awarded the Michelin star. He described a feeling of happiness that literally gets under one's skin. This documents how high the commitment and the pride are in receiving this external award. Apart from that we find evidence as expected. The probability of receiving an award increases with age and gender decreases the probability, even this factor is not significant.

8. Discussion

According to our research question "who can reach for the stars?", we can provide the following answers: In addition to the support of a hotel or investor, vocational training in a restaurant with a Michelin star chef is also very important and valuable for the chefs' own career. With increasing age and experience the probability of getting more Michelin stars increases. Caused by sexism (Haddaji *et al.*, 2017; Pratten, 2003) women are rarely found in the higher Michelin star categories. It will be interesting to observe whether the gender issue spreads to the generation of young chefs in the future.

Unlike Spurk *et al.* (2019) another finding of our study is, that objective career success can also act as a subjective individual selective incentive. We have brought the two discourses together for the first time and have shown the interaction between objective and subjective factors. Our study supports that Michelin stars fulfill different functions. On the one hand, the

award measures the objective career success of chefs. On the other hand, it serves as a selective incentive. The findings that all chefs are highly intrinsically motivated are consistent with the analysis from Cesário *et al.* (2017). Yet, the difference between non-star chefs and star chefs can be seen in the form of extrinsic motivation, as the star also acts as an external incentive for Michelin star chefs. Receiving a Michelin star, in general, is a great achievement, but there are more differences in the hierarchy of stars. A 3-star chef compares the award of the first star with a bronze medal, the award of the second star with a silver medal and the award of the third star accordingly with a gold medal. It is therefore an award that enjoys the highest recognition and legitimacy within the community of chefs and is also very well known among guests. In accordance with Surlemont and Johnson (2005), we have found that the award of stars is an allocation of prestige. Everyone in the world is familiar with the meaning of this award. With the stars a hierarchy of recognition is created within the gastronomy scene and prestige is awarded. Whether guest or employee, everyone can assess the value and thus also pay tribute to the person who has received this award. It is not without reason that this achievement is presented to the team internally as well as to the guests externally. The glow of the stars does not only fulfill an important internal signaling function, but it also shines externally in different directions (e.g., guests, blogger, inspectors and reviewers of other restaurant guides).

The reason why both groups, the awarded and non-awarded chefs are very high intrinsically motivated is twofold: On one side, members of both groups perceive a very high autonomy and competence because they all develop and cook the menus and dishes themselves. On the other side, all feel committed to the social norm of chefs, in which they were socialized. The social norm of chef states that chefs help each other. Even if someone has a lot to do, it is a hidden rule that the colleague who is still lagging behind should be helped (Cooper *et al.*, 2017). Lane (2014) calls this social norm and special identity “brotherhood of chefs” (Lane, 2014, p. 82).

9. Practical implications

The most important practical advice for restaurant or hotel owner and managers from our research is that if they want to build a top restaurant, they should hire a Sous-Chef from a 2 or 3 Michelin star restaurant. This is true for two reasons: Firstly, young chefs have learnt the art of fine dining and the organization of the haute cuisine. Secondly, the inspectors from the

Guide Michelin monitor where Sous-Chefs of Michelin starred chefs have become chefs when they open an own restaurant or are employed as a head chef at another restaurant in the meantime. These new chefs appear almost automatically on the Michelin Guide's testing list of inspectors. As we have been able to show, there is a high probability that they will also be awarded a Michelin star. Accordingly, the advice for aspiring chefs is that they should stay for a vocational training at a star chef or complete at least an internship there.

10. Limitations and future research

However, our empirical study also has limitations, so we did not distinguish between different countries. On the one hand, the star awards of the Guide Michelin are worldwide accepted and recognized as the Oscars of fine dining. Therefore, they are a reliable measure for the objective career success and our study supports this for the German context. On the other hand, as we know from studies on culture-specificity, norms, values, and traits such as intrinsic motivation differs between cultural regions (Huang and Van de Vliert, 2003). Apart from that, the professional education of chefs in Germany is, because of the triannual dual training system, somehow unique. There are few comparable forms of apprenticeship like the 6-month training period of the famous culinary school “Le Cordon Bleu”³ in France and England where cooks from all over the world join to learn the basics of the French Cuisine or the academic program of the »Culinary Institute of America«⁴. Therefore, it would be interesting to transfer our research question for a follow-up study into an intercultural context.

³ <https://www.cordonbleu.edu/home/en>

⁴ <https://www.ciachef.edu>

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