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Full Length Research Paper

Effect of resource allocation on service delivery by Water Works Development Agencies in Kenya

Mutambuki Duncan Mulandi* and Kabui Anne Christine

Department of Business and Entrepreneurship, School of Business and Economics, South Eastern Kenya University, Kitui, Kenya.

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The Kenyan government strives for every Kenyan to have access to water and sanitation services, primarily through Water Works Development Agencies (WWDAs). This paper sought to understand the effect of resource allocation on service delivery by WWDAs in Kenya. A census of all the agencies in Kenya was done, while a sample of 80 employees across these agencies responded to the questionnaire. Primary data were collected through questionnaires; data were cleaned up and coded into the Statistical Package for Social Sciences. Descriptive statistics measures of central tendency were used to analyze and interpret the data, while skewness and kurtosis was used to confirm the normal distribution of data. Inferential statistics in ordinal regression were tested for a possible relationship between the independent and dependent variables. Results from the evaluation revealed that resource allocation had a significant effect on service delivery of WWDAs in Kenya. According to the findings, the dependent variable and resource allocation had a strong positive and significant association (service delivery). As a result, this study established that resource allocation influenced the delivery of services by Kenya's WWDAs in a positive and significant way. The study concluded that any variability in resource allocation results in a corresponding variability in service delivery by WWDAs in Kenya.

Key words: Resource allocation, service delivery, strategy implementation

INTRODUCTION

The government's drive to improve water services in Kenya started in 1967. By 1970, Kenya had achieved high urban water supply service coverage but due to rural-urban migration, water delivery services in the urban areas was strained. Even with interventions such as policies and regulatory measures, the sector continues

to face challenges that range from water scarcity, water quality, population pressure, climate change etc. (Chepyegon and Kamiya, 2018). These challenges have worsened in developing countries like Kenya due to rapid population growth, economic development and urbanization which has made it so difficult to address the

*Corresponding author. E-mail: akabui@yahoo.com.

issue (Mulwa et al., 2021). As a result, access to safe drinking water and basic sanitation has become a global human rights issue in the twenty-first century. Although the United Nations (UN) has been putting measures to address the world's water crisis for a long time, water coverage remains a concern for various countries around the world, including Kenya (World Economic Forum, 2019). For this reason, the Government of Kenya under the Water Act 2016 established the Water Works Development Agencies (WWDAs) as state corporations under section 152 of the Water Act 2016. The agencies formed part of the reforms in the water sector. The Act in section 68 provides the functions of the WWDAs which were established through the Kenya Gazette Notice No. 28 of 2019. The agencies are eight and they include; Tana, Athi, Rift Valley, Lake Victoria North, Lake Victoria South, Tanathi, and Northern (Water Act, 2016). The main purpose of these agencies is to build, maintain, and manage national public water systems. In addition, they operate the waterworks and offer water services until they are given over to the county government, joint committee, authority of county governments, or water services providers' whose jurisdiction or supply the waterworks are located (Water Act, 2016). Through the WWDAs, the Kenyan government aims at improving water coverage by providing water and sanitation for all its citizens by the year 2030 under the social pillar of Kenya Vision 2030 (Government of the Republic of Kenya, 2007). However, current access to water is low. Only 26% of the population are served by regulated providers, and the remaining 74% rely on small private operators, community-managed systems, or self-supply (Kenya Markets Trust, 2019). Hence, water supply in Kenya is unreliable with minimal coverage. Although, the United Nations (UN) has been putting in measures and providing resource support to address the world's water crisis for a long time, water coverage remains a concern for various countries around the world including Kenya (Mwihaki, 2018). In effect, this has caused a look at service delivery by WWDAs as one avenue that may explain this discrepancy. In order for WWDAs to achieve the Kenya Vision 2030 offer effective service delivery, resource allocation is a major factor. Little research work has been done to uncover how resource allocation affects the service delivery of WWDAs. Towards this cause, this paper examines literature, reviews, studies, reports, and other relevant information regarding WWDAs service delivery in relation to resource allocation. The paper further examines opportunities for improvement in WWDAs and offers a solution proposal. Findings from this study will assist policymakers and government agencies in creating policies to manage the country's water resources. In addition, this study will assist the managers of WWDAs to understand how strategy implementation affect their service delivery and hence they will know the better way to deliver water

services to the Kenyan citizens.

Statement of the problem

The Government of Kenya has put in place measures to ensure that everyone has access to water and sanitation. This was also included under the social pillar of Kenya Vision 2030, where water access and coverage is expected to be universal to all Kenyans by 2030 (Government of the Republic of Kenya, 2007). From progress reports, water coverage was at 57% as of 2018, with a 100% target projection and universal access by 2030 (Kenya Markets Trust, 2019). This shows a slow progress from the previous years, that is 48% in 2010 and 55% in 2017 (Arnold, 2018). This does not reconcile with WWDAs mandate which was to primarily provide water services. Their main function was to carry out this mandate, have strategic plans with a detailed strategy for increasing water and sanitation access but still water coverage, access and sanitation provision remains below the target levels. In effect, this has caused a look at service delivery by WWDAs as one avenue that may explain this discrepancy. In order for service delivery to be as effective, there needs to be a considerable amount of resource allocation. Resource allocation is necessary for effective service delivery and most organizations cannot gain maximum performance due to lack of adequate resources. Resources especially financial resources, positively influence organizational performance (Elbanna and Abdel-Maksoud, 2020). When organizations fail to employ resources, the results are unnecessarily high operation costs, uncoordinated public activities, and failure to attract and keep experienced and skilled personnel in the position (Sadiq, 2019).

LITERATURE REVIEW

Resource based theory

The paper adopted the Resource-Based Theory to assess the impact of resource allocation on service delivery by Kenya's WWDAs. The theory was introduced by Wernerfelt in 1984 where an organizations competitive advantage is defined by the resources it can access and exploit rather than its ability to manage the environment (Ahmed and Othman, 2017). Resources as defined by Barney Jay in 1991 include; 'all assets, capabilities, organizational processes, firms' attributes, information, and knowledge controlled by the firm.' (Luján Salazar, 2017). These resources further comprise organizational assets/capabilities. They include shared knowledge, employee's competency, capital equipment, employer brand and organizational reputation and are great sources of competitive advantage and hence enhance organizational performance ((Ahmed and Othman, 2017). Firms have a collection of assets, competences,

processes, skills, and knowledge, that are valuable, rare and difficult to copy and substitute that provides them a competitive advantage (Ande et al., 2018). Therefore, firms use their unique resources and capabilities to execute activities in order to ensure value maximization. The basis of the theory is that a firm has resources and capabilities which it can translate to a strategic advantage (Mwikya and Khamah, 2020). Therefore, the success of WWDAs lies in their ability and capacity to manage their resources effectively so as to improve service delivery. Understanding the resources available to an organization and how they can be leveraged to enhance goal attainment is key to better performance (Karama et al., 2019). Therefore, it plays an instrumental role in establishing how WWDAs employ their financial resources to improve their attainment of service delivery goals. According to the resource-based perspective, managers must generate and secure strategic resources that are valued, uncommon, non-imitable, and non-substitutable in order to gain competitive advantage. But the resource-based perspective does not explain how managers may accomplish this.

In addition, the value creation idea that has been proposed based on this theory regarding valuable resources implies that the theory is self-verifying and is not empirically testable (Utami and Alamanos, 2022). The applicability of the resource-based paradigm is also limited, according to the authors. This is because the concept itself cannot be used in facing market challenges that are rapidly changing or dynamic, due to the static nature of the theory, and requires a long process of building the resources needed (Widjaja and Yuga, 2020). Hence, smaller enterprises are excluded from the resource-based paradigm since sustained competitive advantage cannot be built on static resources, and thus fall outside of its scope. The theory displays elements of strategy implementation that influences service delivery, especially resource allocation. As a theory of competitive strategy, it explains "competitive heterogeneity": differences in performance among firms and the underlying heterogeneity that explains these differences. Competitive advantage occurs only when there is resource heterogeneity (different resources among organizations) and resource immobility (competing firms' incapacity to get resources from other enterprises (Stoelhorst, 2021). If a resource is not totally mobile (that is, it cannot readily move between firms) or if a firm faces a large cost penalty in producing, acquiring, or employing it, the resource is likely to be a source of sustained competitive advantage. Any benefits received by copying or substituting a resource may be transient (Campbell and Park, 2017).

Resource allocation and service delivery

Service delivery is getting services as effectively and as

quickly as possible to the intended recipient. In most instances, it implies a degree of excellence on the part of the organization (Karanja and Juma, 2020). Mengich and Kiptum (2018) investigated the impact of strategic plan resource allocation on quality service delivery in Kenya's sugar producing enterprises in the Western Region of Kenya. The findings showed that allocating strategic plan resources to quality service delivery in the sugar production business had a considerable positive impact (p-value 0.000). According to the findings, allocating skilled human resources in strategy implementation to improve service quality, allocating financial resources to intended strategies to ensure quality service delivery, allocating adequate inventory in strategy implementations, and allocating information technology improve the service quality of the organization. In addition, Scott (2019) investigated the impact of public spending management systems on service delivery in the public sector using the case of Ghana's District Assemblies. According to the findings, the District Assemblies have procedures, structures, regulations, and policies in place to govern their expenditure management approaches. There were also hints that some expenses were given higher priority than others. While DA personnel rated the District Assemblies' existing spending management practices as efficient or very efficient, key informants noted that the District Assemblies' recurrent expense was almost always greater than the development expenditure. This tendency, according to the informants, made it difficult for the assembly to manage financial resources intended for public service initiatives effectively. As a result, the study indicated that district assembly' public expenditure management procedures had a major impact on service delivery in Ghana. Lemarleni et al. (2017) looked into the effects of resource allocation on strategy implementation at the Kenya Police Service in Nairobi County. The study's precise goals were to see if financial resource allocation, human resource allocation, and technical resource allocation all impact strategy implementation in the Kenyan police force. The analysis found that the Kenya Police Service's financial resource allocation is woefully inadequate for implementing strategy and related activities. As a result, financial resources are insufficiently and improperly dispersed, hampering strategy implementation efforts and resulting in shortcomings in Kenya police service delivery and a halt in the police reform process. The study also found that the Kenyan police force's human resources are under-empowered in terms of professional growth and participation in plan implementation. In addition, the survey found that the Kenya Police Service does not fully embrace information and communication technology. The study found that plan execution is to blame for the Kenya Police Service's observed improvements in key areas, including increased internal process efficiency, improved

service delivery, and lower crime rates. The Service's strategy implementation needs to be strengthened even more.

As a country, Kenya aims to provide water and sanitation for all its citizens by the year 2030 under the social pillar of Kenya Vision 2030. To achieve this, WWDAs need to allocate a considerable amount of resources to deliver these services. A research conducted by Ongeti and Machuki (2018) on Kenyan State owned corporations shows that there is a significant relationship between organizational resources and performance. Hence they are a prerequisite for a smooth operating organization. Thus, they need to be allocated carefully and generously. On the downside, allocating these resources requires careful practice by an organization to acquire them. Some examples of organizational resources are technology, people, and finances. These organizational resources are crucial to the success and growth of an institution (Ongeti and Machuki, 2018). For a firm to reach optimum performance and improve on service delivery, resource allocation needs to be a top priority. Besides resource allocation, service delivery is essential as it increases the worth of clients (Rasul and Rogger, 2018). Hence, service providers should know what consumers desire from public services to improve service delivery. The service providers should be empowered with what they need, including resources, to offer the best services (Zeithaml, 2018). Depending on the type of service offered, each service has a primary intervention to transform the customer. Hence, delivering quality service to the citizens is critical for the success and survival of any public organization in today's competitive business environment.

METHODOLOGY

A cross-sectional research design was used for this study. It entails the researcher gathering data from a large number of people at the same time while maintaining control over the factors. It is recommended because it provides a detailed description of a scenario and guarantees that data collection is conducted without bias (Zangirolami-Raimundo et al., 2018). The study's target population was 434 workers from Kenya's WWDAs. All the eight water agencies nationwide were targeted, hence a census for the unit of analysis. The study sampled 80 respondents (Heads of Departments and Divisions) as they were deemed to have a direct responsibility in strategy implementation. The study managed to collect an excellent response rate of 88.75%, using questionnaires deemed sufficient for the data analysis to proceed; they provide enough evidence for drawing study conclusions. Data from questionnaires administered were edited, structured, and sorted before being coded into a data usable table in the Statistical Package for Social Sciences (SPSS Version 26 for analysis). The data were analyzed using a variety of statistical methods, including descriptive statistics, cross tabulations, and ordinal logistic regression, all of which were tested against their respective assumptions. The statistical parameters obtained by the software were displayed in the tables for easy comprehension and interpretation. The data were evaluated using inferential statistics

such as ordinal regression to see if there was a relationship between the independent and dependent variables. The researcher was able to draw conclusions from the responses based on the statistical data.

RESULTS

The study's major goal was to understand the effect of resource allocation on service delivery by Kenya's WWDAs.

Response rate

The study distributed 80 questionnaires to the respondents from the eight (8) WWDAs, of which 71 were completed and returned to the researcher; and the data analysis was based on those 71 questionnaires. As seen in Table 1, this equated to an 88.75 percent response rate. All the responses by the respondents (Unit of observation) were consolidated into one forming the unit of analysis (the WWDAs).

Descriptive statistics for resource allocation

Table 2 summarizes the outcomes of the study, which tried to identify the sources of agency funding. Table 2 indicates that 7.0% of the agency funding came from the Government of Kenya (GoK), 9.9% said the source of agency funding was the development partners (Donors), 4.2% said internally generated revenue, 39.4% said all of the above (that is GoK, Donors and Internally Generated Revenue); while another 39.4% said GoK and development partners (Donors). The study's next goal was to identify obstacles that could block Kenya's WWDAs from providing services. The findings are summarized in Table 3. The findings of the study, which aimed to assess the rating of Kenyan WWDAs' service delivery, are summarized in Table 4. In Table 4, most of the respondents (50.7%) assessed the service delivery of Kenya's WWDAs as very good, 43.5 percent rated it as good, 2.9 percent said it was excellent, and another 2.9 percent said it was terrible. In Table 5, majority of the respondents rated number of development projects undertaken in terms of national public water works as very good (median, mode = 4, 4 and skewness, kurtosis = -0.53 and -0.578 respectively), majority rated number of citizens connected to water provided by the Agencies as good (median, mode = 3, 3 and skewness, kurtosis = -0.257 and 0.092 respectively), majority of the respondents rated number of reserve capacities available as very good (median, mode = 4, 4 and skewness, kurtosis = -0.371 and -0.457 respectively), majority rated number of technical expertise and capacity building conducted by the agency as very good (median, mode = 4, 4 and skewness, kurtosis = -0.223 and -0.5 respectively), majority rated customers' satisfaction as

Table 1. Response rate.

Variable	Sampled	Responded	Percent
Coast	10	10	100.0
Tanathi	10	10	100.0
Tana	10	8	80.0
Central Rift Valley	10	7	70.0
Lake Victoria South	10	10	100.0
Lake Victoria North	10	10	100.0
Athi	10	7	70.0
Northern	10	9	90.0
Total	80	71	88.75

Source: Authors.

Table 2. Sources of agency funding.

Variable	Frequency	Percent	Cumulative percent
GoK	5	7.0	7.0
Development partners (donors)	7	9.9	16.9
Internally generated revenue	3	4.2	21.1
All of the above	28	39.4	60.6
GoK and development partners (donors)	28	39.4	100.0
Total	71	100.0	

Source: Authors.

Table 3. Factors that hinder service delivery of WWDAs.

Variable	Frequency	Percent	Cumulative percent
Lack of resources	40	56.3	56.3
Lack of Top Management Support to strategy implementation	17	24.0	80.3
Old and dilapidated infrastructure	6	8.5	88.8
Lack of a clear organization structure	5	7.0	95.8
Non-implementation of water sector reforms	3	4.2	100.0
Total	71	100.0	

Source: Authors.

Table 4. Rating service delivery of WWDAs.

Variable	Frequency	Percent	Cumulative percent
Poor	2	2.9	2.9
Good	30	43.5	46.4
Very Good	35	50.7	97.1
Excellent	2	2.9	100.0
Total	69	100.0	

Source: Authors.

good (median, mode = 3, 3 and skewness, kurtosis = 0.246 and -0.788 respectively), and majority of the respondents further rated general growth rate as very good (median, mode = 4, 4 and skewness, kurtosis = -0.088 and -0.514, respectively).

Crosstabulation of service delivery against resource allocation

Table 6 displays the findings of the study's crosstabulation of service delivery vs. resource allocation.

Table 5. Descriptive statistics table for service delivery.

Variable	Median	Mode	Skewness	Std. error of skewness	Kurtosis	Std. error of Kurtosis	Percentiles		
							25	50	75
Number of development projects undertaken in terms of national public water works	4	4	-0.53	0.285	-0.578	0.563	3	4	5
Number of citizens connected to water provided by the Agencies	3	3	-0.257	0.285	0.092	0.563	3	3	4
Number of reserve capacities available	4	4	-0.371	0.285	-0.457	0.563	3	4	4
Number of technical expertise and capacity building conducted by the agency	4	4	-0.223	0.285	-0.5	0.563	3	4	4
Customer Satisfaction	3	3	0.246	0.285	-0.788	0.563	3	3	4
General growth rate	4	4	-0.088	0.285	-0.514	0.563	3	4	4

Source: Authors.

Majority (73.1%) of those who said they were not sure on the Resource Allocation rated service delivery as average, 57.1% of those who agreed on the Resource Allocation rated service delivery as good, while majority (60.0%) of those who strongly agreed on the Resource Allocation rated service delivery as very good. The value of lambda (.372, p -value = .001 < 0.05) indicated in Table 7 shows that the independent variable, resource allocation had statistically significant relationship with the dependent variable, service delivery.

Reliability analysis

According to Taber (2018), Cronbach's Alpha reliability co-efficient was used as a measure of reliability. The Cronbach's Alpha reliability co-efficient was calculated using SPSS software to test reliability, and a value of 0.7 or higher was considered sufficient for further data analysis (Table 8). The variable resource allocation was found to be reliable at Cronbach's Alphas of

above 0.7 as presented in Table 8. As a result, the data obtained had a high level of internal consistency, making it reliable for data analysis.

Descriptive statistics for resource allocation

The study generated a descriptive statistics table of resource allocation and the findings are summarised in Table 9.

Correlation between the variables

The researcher generated a Bivariate Spearman's correlation between service delivery and resource allocation with the help of SPSS software. The results are listed in Table 10. Resource allocation (RA) had a strong positive and statistically significant ($R = .661$, at p -values = .000 < .05) relation with the dependent variable (Service Delivery) as shown in Table 10. This implies that a variability in resource allocation would result in subsequent variability in the dependent variable (Service Delivery) and the vice versa is true.

Ordinal logistic regression

Checking for the assumptions of ordinal logistic regression

Using ordinal regression, according to Harrell (2015), requires first ensuring that the data in question can be analyzed using ordinal regression. This entails testing for four assumptions that ordinal regression requires in order to get accurate findings. This also assures that the data under study's results are not fictitious. According to one of the assumptions, the dependent variable should be assessed on an ordinal scale. This was ascertained by checking the way the data were entered in SPSS and ensuring that the measure selected was ordinal and further ensuring that the dependent variable data itself was ordinal. The second assumption involved checking whether the independent variables were continuous, ordinal or categorical. In this case, the study ascertained that the independent variables' data were continuous. The third and fourth assumptions involved checking for multicollinearity as well as proportional odds that

Table 6. A Cross tabulation of service delivery and resource allocation.

Variable	Resource Allocation				Total		
	Disagree	Not Sure	Agree	Strongly Agree			
Service Delivery	Poor	Count	3	1	0	0	4
		% within Resource Allocation	33.3%	3.8%	0.0%	0.0%	5.6%
	Average	Count	2	19	5	0	26
		% within Resource Allocation	22.2%	73.1%	23.8%	0.0%	36.6%
	Good	Count	4	6	12	6	28
		% within Resource Allocation	44.4%	23.1%	57.1%	40.0%	39.4%
	Very Good	Count	0	0	4	9	13
		% within Resource Allocation	0.0%	0.0%	19.0%	60.0%	18.3%
Total	Count	9	26	21	15	71	
	% within resource allocation	100.0%	100.0%	100.0%	100.0%	100.0%	

Source: Authors.

Table 7. Lambda table of resource allocations and service delivery.

Variable	Value	Asymptotic standard error ^a	Approximate T ^b	Approximate significance		
Nominal by Nominal	Lambda	Symmetric	0.375	0.095	3.565	0.000
		Service delivery dependent	0.372	0.117	2.652	0.008
	Resource allocation dependent	0.378	0.098	3.276	0.001	
	Goodman and Kruskal tau	Service delivery dependent	0.250	0.064		0.000 ^c
		Resource allocation dependent	0.259	0.061		0.000 ^c

^aNot assuming the null hypothesis; ^bUsing the asymptotic standard error assuming the null hypothesis; ^cBased on chi-square approximation
Source: Authors.

Table 8. Kendall's tau-b table of resource allocation and service delivery.

Value	Asymptotic standard error ^a	Approximate T ^b	Approximate significance	
Ordinal by Ordinal Kendall's tau-b	0.593	0.071	7.627	0.000
N of Valid Cases	71			

^aNot assuming the null hypothesis; ^bUsing the asymptotic standard error assuming the null hypothesis
Source: Authors.

were both checked from tables generated from the dataset using SPSS. In the subsections that follow, the findings are presented and discussed.

Checking for multicollinearity

The researcher aimed to see if the dependent and independent variables had any multicollinearity. To establish whether or not there is *multi-collinearity*, the *tolerance level* and the *variance inflation factor (VIF) diagnostic parameters* are used (Leech et al., 2015). Table 11 summarizes the findings. Table 11 reveals that there was no multicollinearity existing between service

delivery and independent variable, resource allocation because the VIF was less than ten.

Ordinal logistic regression for resource allocation and service delivery

The results of an Ordinal Logistic regression research between the independent variable (resource allocation) and the dependent variable (service delivery) are presented in Tables 12 to 14. The Chi-Square statistic is 38.838 with a p-value of.000.05. The Chi-Square statistic is 38.838 with a p-value of.0000005, according to Model Fitting Information Table 9. As a result, the model seems

Table 9. Reliability analysis of resource allocation.

Reliability statistics		
Variable	Cronbach's Alpha	N of Items
Resource allocation	0.922	6

Source: Authors.

Table 10. Bivariate Spearman's correlation of service delivery and resource allocation.

Correlations			
		SD	RA
Service delivery (SD)	Correlation coefficient	1.000	
	Sig. (2-tailed)	0.0	
	N	71	
Spearman's rho	Correlation coefficient	0.661**	1.000
	Sig. (2-tailed)	0.000	0.0
	N	71	71
Resource allocation (RA)	Correlation coefficient	0.661**	1.000
	Sig. (2-tailed)	0.000	0.0
	N	71	71

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Authors.

Table 11. Multicollinearity check of the variables.

Coefficients ^a			
Model		Collinearity statistics	
		Tolerance	VIF
1	Resource Allocation	0.178	5.604

a. Dependent Variable: Service Delivery

Source: Authors.

Table 12. Model fitting information table resource allocation and service delivery.

Model fitting information				
Model	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	74.643			
Final	35.805	38.838	1	0.000

Link function: Logit.

Source: Authors.

Table 13. Pseudo R-square table resource allocation and service delivery.

Pseudo R-Square	
Cox and Snell	0.421
Nagelkerke	0.463
McFadden	0.226

Link function: Logit.

Source: Authors.

Table 14. Parameter estimates table of resource allocation and service delivery.

		Estimated Parameters					95% Confidence Interval	
		Estimate	Std. error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[SD = 2]	2.781	1.026	7.348	1	0.007	0.770	4.791
	[SD = 3]	5.978	1.166	26.276	1	0.000	3.692	8.264
	[SD = 4]	8.821	1.455	36.738	1	0.000	5.969	11.674
Location	RA	1.809	.330	29.986	1	0.000	1.161	2.456

Link function: Logit.

Source: Authors.

to have a good fit with the data. The Pseudo R-Squares values derived from the data in Table 13 range from .226 influence of the independent factors on the dependent variable. Thus, from Table 13, resource allocation contributes .463 for every unit increase in the total variability of the dependent variable (Service Delivery). From the Parameter Estimates in Table 14, resource allocation was statistically significantly ($\beta = 1.809$, p -value = $.000 < 0.05$ threshold). This means that as the resource allocation increases the likelihood of service delivery increasing will also significantly increase and vice versa. The study rejected the H_0 : resource allocation has no significant influence on service delivery by WWDAs in Kenya. The results of the study showed that there was statistically significant relationship between the independent variable (resource allocation) and the dependent variable (Service delivery).

DISCUSSION

The research objective was to examine the impact of resource allocation on service delivery by Kenya's WWDAs. Resource Allocation demonstrated a positive and statistically significant ($p.05$) association with the dependent variable, according to the correlation analysis results (Service Delivery). As a result, a variability in resources allocation would result in a similar variability in service delivery by WWDAs in Kenya. The findings of this study corroborated those of Mengich and Kiptum (2018), who discovered that strategic plan resource allocation had a positive significant contribution to sugar manufacturing enterprises' quality service delivery in Kenya's Western Region (p -value 0.000).

CONCLUSION AND RECOMMENDATIONS

This paper sought to look into the impact of resource allocation on Kenya's WWDAs' service delivery. According to the findings, the dependent variable and

to.463. The Nagelkerke's Pseudo R-Square has a range of 0 to 1, with a higher value indicating a greater resource allocation had a strong positive and significant association (Service Delivery). As a result, this study established that resource allocation influenced the delivery of services by Kenya's WWDAs in a positive and significant way. As such any variability in resource allocation results in a corresponding variability in service delivery by WWDAs in Kenya. Policymakers and government agencies can use the findings of this study in creating policies to manage the country's water resources. The study identified the areas of weakness in service delivery by WWDAs and in effect, the government can use them to develop policies for water resource management and provision in the country. More specifically the results of this study would help the Ministry of Water, Sanitation and Irrigation as the main policy makers in the water sector in devising policies that would help in improving service delivery to Kenyan citizens. The study found that lack of resources is a challenge in the delivery of service by WWDAs in Kenya. Therefore, this study recommends that the WWDAs in Kenya should be empowered with sufficient resources so as to enable it provide adequate and proper services to the citizens.

CONFLICT OF INTERESTS

The authors have not declared any conflicts of interests.

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Full Length Research Paper

Effect of anxiety perception on consumers' luxury nostalgic consumption intention

Xi Chen* and Dandan Wang

Business School, China University of Political Science and Law, China.

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In a quest to investigate whether perceptions of death anxiety can influence the intention of nostalgia consumption of luxury brands, based on Terror Management Theory (TMT), the present study examines the influence of perceived death anxiety on consumers' nostalgia feeling, and its impact on consumers' intention of purchasing nostalgia luxury products. Data were collected online and offline from 419 brand users and examined using the structural equation modeling (SEM) technique. The results reveal that perceived death anxiety positively influence consumers' sense of nostalgia that includes personal nostalgia and interpersonal nostalgia. It also positively influences consumers' intention to purchase nostalgia luxury brand products, where nostalgia consumption refers to style and craft-induced nostalgia consumption and storytelling induced nostalgia consumption. This proves the mediating role of nostalgia emotion. Moreover, self-construal moderation analysis reveals that consumers with interdependent self-construal are more concerned with their own sense of belonging and interpersonal relationships, are more easily affected by the environment and will have a higher intention of buying nostalgic luxury goods after experiencing stronger death anxiety. This confirms the moderating role of self-construal.

Key words: Death anxiety, terror management theory, nostalgic consumption, self-construction.

INTRODUCTION

Since 2020, the outbreak of COVID-19 has seriously affected the economy and livelihood of people in many countries and has also brought fear and insecurity to many people, which have led to rising death anxiety of individuals. Death anxiety affects not only people's mentality, but also their consumption behavior. In particular, the global luxury industry has been hit hard during this period. However, with the effective control of the epidemic in a certain range, the luxury market in China has rebounded strongly. Designers of Chanel, Prada, Lanvin and other brands express their design

ideas with "past" and "nostalgia" as the main themes, with Archives as the inspiration, and even antique products as the form to present the distinctive styles of various fashion houses. At such an extraordinary moment of the epidemic, the feelings of the past bring people a warmth and peace of mind. In terms of research, the Journal of Consumer Research, a top journal in the field, published a full issue of feature articles on death anxiety and consumers' behavior in the post-epidemic context in their October issue of year 2020, which also demonstrates the current ultra-high popularity of the topic of death anxiety.

*Corresponding author. E-mail: 45706582@qq.com.

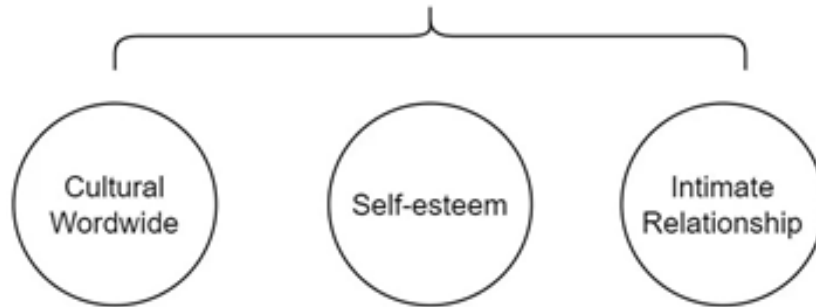


Figure 1. Three mechanisms of distal defense against death anxiety.
Source: Authors

Consumption scenes in many sectors, including fast consumed merchandize brands and high-end brands, have been reshaped by the epidemic. Does the catastrophe, such as COVID-19 affect consumer spending on luxury goods? If so, are consumers more inclined to buy luxury goods with nostalgic design, or to choose trendy ones? This paper focuses on the luxury industry in the post epidemic era to explore whether and how death anxiety enhances consumers' willingness to buy nostalgic luxury goods.

LITERATURE REVIEW, THEORETICAL BASIS AND HYPOTHESES

Death anxiety and defense mechanisms

Pyszczynski and Solomon proposed the Terror Management Theory (TMT) in 1986, which holds that when people realize the inevitability of death, they will instinctively have fear and anxiety about death. Pyszczynski et al (1999). developed a model of psychological defense against death in 1999, explored the dual-process defense model (proximal defense and distal defense), and explained the cognitive process of defense. They divided death-related thoughts into unconscious and conscious ones. When an individual first receives the message of death, the proximal defense is first triggered, and measures are taken to deny, refuse to think and distract attention at the level of consciousness, so as to push the idea of death away from consciousness. When the suppressed thought still exists and brings certain negative responses to the individual, the distal defense controlling the edge of conscious thoughts or the unconscious thoughts is activated, and the individual makes some corresponding behavioral reactions to reduce the subconscious thoughts about death, such as enhancing self-esteem, maintaining the cultural worldview, seeking intimate relationship and so on. At present, most research on the defense mechanism against death anxiety focuses on distal defense (Figure 1).

Cultural worldview defense

Cultural worldview is a concept of symbolic reality constructed by human beings, which endows life with order, eternity and stability so as to realize spiritual immortality. On this basis, a wide range of values have been formed, and individuals who meet certain standards of values can be considered to obtain a sense of personal value and symbolic meaning beyond death.

Terror Management Theory puts forward the "mortality salience" hypothesis, which holds that when individuals contact or perceive death related thoughts, they will significantly increase their dependence on the worldview they maintain, so as to buffer the death-induced anxiety. This leads people to respond positively to people who adhere to cultural values (such as heroes) and negatively to those who violate cultural values (such as moral transgressors) (Greenberg et al., 1986); and they make positive comments on those who uphold their beliefs, such as those who share the same religious belief and cultural praise, while having negative comments on those who threaten their beliefs (Greenberg et al., 1990), and have impact on the effectiveness of different types of advertisement appeals (Cai and Wyer, 2015)

Self-esteem defense

Self-esteem is gained by believing that you meet the standards of values inherent in the cultural worldview. The "anxiety buffer" hypothesis proposed in the Terror Management Theory maintains that self-esteem provides protection against anxiety, and enhancing self-esteem will make individuals less prone to anxiety and related behaviors. Experiments have proved that enhancing self-esteem can reduce self-reported anxiety from death images and videos (Greenberg et al., 1997). From research, patients with depression tend to have low self-esteem and respond intensely to mortality salience (Simon et al., 1998) and people prefer domestic brands after being exposed to death related news (Liu and Smeesters, 2010) by enhancing consumers' patriotism.

Intimate relationship defense

At the beginning of the 21st century, some scholars such as (Florian et al. 2002) proved through experiments that mortality salience can affect individuals' attachment to intimacy. They put forward the death anxiety defense mechanism of "intimate relationship", believing that people can combat the fear of death by improving their sense of belonging and emotional attachment. Their experiments revealed that individuals will actively seek intimate relationship when death anxiety is stimulated, and a stable and reliable intimate relationship is the first choice to effectively inhibit anxiety. According to the Terror Management Theory, this paper holds that the third defense mechanism, that of intimate relationship (including sense of belonging, emotional attachment, etc.) plays an important role in consumers' consumption of luxury products after a catastrophe. In other words, when death anxiety comes, consumers will miss the happy and stable family life in the past, and cling to the beautiful things they loved in childhood, so as to stimulate their inner nostalgia and weaken or resist the feeling of anxiety.

Nostalgia

The term "nostalgia" was originally coined by Swiss doctor Johannes Hofer to describe the psychological and physical symptoms of soldiers who showed an extreme desire to return when they were fighting far away from home. In the 19th century, nostalgia was regarded as a kind of melancholia, which was closely related to mental depression and low spirit. By the late 20th century, nostalgia had a new connotation. Davis (1979) defined nostalgia in his works as the longing for the past which is mostly associated with warmth, childhood and old times, creating a new frontier for research in nostalgia. The current concept of nostalgia is quite far from the negative derogatory meaning in the early days. It mostly refers to people's desire to go back to the past, a feeling most people have in their life. From the perspective of psychology, the affect theory holds that nostalgia is a feeling of happiness, which is mainly associated with positive emotions (Johnson and Oatley, 1989; Wildschut et al., 2006) such as fraternity, happiness and pride that can enhance social ties and produce positive influence and self-awareness. As for the trigger mechanism of nostalgia, some scholars believe that it is an emotional compensation. Generation of nostalgia may be related to the social environment. For example, in the time of social unrest, people will feel anxiety, uneasiness and fear, resulting in nostalgia to regulate and compensate for the negative emotions (Davis, 1979; Batcho, 1995). As for the dimensions of nostalgia, the method of Havlena and

Holak (1996) is one of the representative strategies for division. By categorizing nostalgia into four types (individual, interpersonal, cultural and virtual), they summarized the structural system of the definition of nostalgia from two dimensions (personal experience vs. collective experience, and direct experience vs. indirect experience). Chinese scholars Lu (2009) and He Jiaxun (2010) divided consumers' nostalgia within local cultural context into three dimensions: personal nostalgia, family nostalgia and interpersonal nostalgia, and developed the corresponding scale. As there is no significant difference between the evaluation of interpersonal nostalgia and family nostalgia, based on the research of scholars at home and abroad, this paper uses the dimensions of personal nostalgia and interpersonal nostalgia to analyze and measure consumers' nostalgia.

Based on the above analysis, the following hypotheses are put forward:

H1: Perceived death anxiety has a positive impact on nostalgia

H1-1: Perceived death anxiety has a positive impact on personal nostalgia

H1-2: Perceived death anxiety has a positive impact on interpersonal nostalgia

Nostalgia and intention of luxury consumption

Foreign scholars have found that under the influence of death anxiety, consumers are more likely to have emotional attachment, generate nostalgic feelings, and choose their familiar brands or products (Hart et al., 2005; Galoni Chelsea et al., 2020). Consumers will be more positive about the past and more likely to recall the past (Routledge et al., 2008). They will be more easily influenced by mainstream views and opinions, follow the in-group preferences, and become more inclined to conformity in behavior (Renkema et al., 2008). Ke Xue (2009) demonstrated through experiments on potato chip tastes and brand selection that consumers will reduce the behavior of seeking diversity in consumption after experiencing great disasters or receiving death-related messages; they almost no longer take risks to try new things, but choose their favorite and reliable brands or goods conservatively. There is no final conclusion as to the measurement of the variable intention of nostalgia consumption behavior. Zimmer et al. (1999), Wang Tao et al. (2011) and Ling Zhou et al. (2013) believe that there are two main nostalgia marketing strategies: to encourage nostalgic images in new product design; and to use stories to make up for the brand's historical background or tradition, so as to arouse consumers' nostalgia and memories. In addition, as consumers often associate high-quality products with the production process,

products with old manufacturing technology or processes will usually stimulate the desire to buy. Therefore, the nostalgia marketing strategy may create a sense of nostalgia for products by adopting nostalgic product appearance, using nostalgic manufacturing technology and telling nostalgic brand stories, so as to stimulate consumers' nostalgia for some good memories of the past, thus arousing the preference and intention of consumption of such products. In other words, it is precisely because consumers have such needs in the styles, crafts and narration of luxury goods that they will have the intention to buy such products, and enterprises and brands will meet the needs of consumers by designing products with corresponding styles or promoting story-telling advertising and marketing with such elements. Therefore, from the perspective of luxury producers or brands, this paper believes that the intention of nostalgia consumption can be divided into two types: that derived from the attributes of the product itself (such as appearance, styles and technology) and that derived from the methods used in the marketing of the product (such as story telling), or intention of nostalgia consumption induced by styles and crafts vs intention of nostalgia consumption induced by story-telling.

A. Intention of nostalgia consumption induced by styles and crafts means that the luxury goods adopt nostalgic design such as classic elements and retro styles, or adopt traditional techniques such as ancient exquisite handicrafts to create a sense of nostalgia in the patterns, styles, colors and crafts of the product itself, making it different from the luxury goods with fashionable and trendy design, and arousing the consumers' feeling of familiarity and nostalgia.

B. Intention of nostalgia consumption induced by story-telling refers to the marketing method of telling the brand history, the product values and other nostalgic stories, adding nostalgic elements to the advertising and marketing events such as story-telling and selling dreams. The product has a moving story related to a certain period of time in the past, which can make consumers think of the past and stimulate nostalgia after seeing or hearing the relevant scenes and thus generate the purchase intention of the luxury goods.

Accordingly, the following hypotheses are proposed:

H2: Nostalgia has a positive impact on intention of nostalgia consumption of luxury goods (z-y)

H2-1a: Personal nostalgia has a positive impact on intention of nostalgia consumption induced by styles and crafts

H2-1b: Personal nostalgia has a positive impact on intention of nostalgia consumption induced by story telling

H2-2a: Interpersonal nostalgia has a positive impact on

intention of nostalgia consumption induced by styles and crafts

H2-2b: Interpersonal nostalgia has a positive impact on intention of nostalgia consumption induced by story telling

H3: Nostalgia mediates the impact of perceived death anxiety on intention of nostalgia consumption of luxury goods

Death anxiety and consumers' nostalgia consumption behavior

With the rapid development of economy, the consumption concepts are gradually updated. In addition to cost performance and practicability, people are paying more attention to the intangible symbolic meaning behind the products for emotional and spiritual satisfaction. Therefore, consumption has become an external manifestation of psychological needs, and people's need for emotional sustenance will often be transformed into demand for some brands, products or services whose symbolization meets their psychological needs. When faced with insecurity such as death anxiety, people often desire to go back to a certain period in the past, and hope to realize this idea emotionally through nostalgic items with some relevant meaning, which give them warmth and security. Stern (1992) called the phenomenon of Americans feeling confused and anxious at the end of the 20th century with increasing uncertainty as the "End of the Century Effect". Under the End of the Century Effect, consumers tended to buy goods that may seem outdated but actually carry the nostalgic feelings, so as to alleviate their inner insecurity, and many marketers and advertising designers used more nostalgic themes to stimulate consumers' purchase. In addition, many advertisements, story marketing events and product designs with nostalgic elements have achieved great success, such as the HandM x Moschino Collection as a tribute to the 1990s and the return of the print fabric created by Gianni Versace (founder of Versace) in the early 1990s. All these show that people tend to buy nostalgic products in the state of anxiety. Wang Tao et al. (2011) found that nostalgic goods that remind people of the good times of the past are often favored by consumers with a low sense of security. When individuals realize the inevitability of death or come into contact with negative factors such as fear and threats in real life, they will make up for the lack of security by choosing nostalgic items. Yu et al. (2014) also studied the intention of nostalgia consumption from the perspective of consumers' insecurity, and reached the same conclusion. They believed that the stronger consumers' insecurity (including death anxiety), the stronger their preference for and intention to purchase nostalgic products. Therefore,

this paper proposes that after consumers have experienced disasters and diseases and has a certain degree of death anxiety, they tend to choose those nostalgic items when buying luxury goods, so as to reduce the death anxiety and compensate for their inner uneasiness. There is a positive relationship between their anxiety and consumption. Accordingly, the dependent variable intention of nostalgia consumption is divided into that induced by styles and crafts and that induced by story-telling, and H4 is hypothesized as follows:

H4: Perceived death anxiety has a positive impact on intention of nostalgia consumption of luxury goods

H4-1: Perceived death anxiety has a positive impact on intention of nostalgia consumption induced by styles and crafts

H4-2: Perceived death anxiety has a positive impact on intention of nostalgia consumption induced by story telling

Self-construal as a moderator

The concept of self-construal was first put forward by Markus and Kitayama (1991) in *Psychological Review*. They held that there is a strong correlation between individuals' self-cognition and their reference system, a cognitive tendency they named self-construal. Markus and Kitayama categorized self-construal into independent self-construal and dependent self-construal. Their classification is mainly based on the impact analysis of regional and cultural background. They found that there are some differences in individuals' self-construal between those from the cultural backgrounds of Western Europe and North America and those from Asia, Africa, Latin America and southern Europe. That of the former centers around the independent self-orientation, while that of the latter tends to be dominated by the their relationship in the environment and society. Independent self-construal emphasizes the display of self-characteristics and the expression of personality, and takes achieving self-goals as the first priority. Individuals with this type of self-construal are good at communicating and cooperating with others in a straightforward manner. The biggest difference between dependent self-construal and independent self-construal is in the emphasis on the sense of belonging and the relationship with the environment and others. Individuals with dependent self-construal always consider their dependence on others, actively integrate with the environment, value their status in society and intimacy in interpersonal relationships, and care about peaceful and healthy interpersonal networks. Consumers' decision-making tendency and product preference in purchase behavior are also closely related to self-construal. Consumers with independent self-construal pursue the uniqueness of brands or products

for the purpose of being different and highlight their unique personality. In contrast, consumers with dependent self-construal value the symbolic meaning and conformity underlying the product (Mandel, 2003). Zhu et al. (2020) found that the more novel the appearance and style of the product, the more likely it is to stimulate the demands of consumers with independent self-construal for uniqueness, so as to increase their purchase desire. The classic mass products with low novelty in appearance cater to the pursuit of low-risk of consumers with dependent self-construal. Many scholars believe that consumers' personality characteristics also affect nostalgia or intention of nostalgia consumption to a certain extent. Because consumers of dependent self-construal pay great attention to the harmony of relationship and environment, they will have stronger nostalgia and are more likely to miss old things and old friends in the event of major disasters or death. Therefore, this paper takes self-construal as a moderating variable, and holds that in the process of perceived death anxiety affecting intention of nostalgia consumption of luxuries, the higher the degree of consumers' dependent self-construal, the stronger their tendency and willingness to purchase nostalgic luxury goods; the higher the degree of consumers' independent self-construal, the weaker their tendency and willingness to buy nostalgic luxury goods.

Accordingly, hypothesis H5 is proposed as follows:

H5: Self-construal moderates the impact of perceived death anxiety on intention of nostalgia consumption of luxury goods

H5-1: Independent self-construal negatively moderates the impact of perceived death anxiety on intention of nostalgia consumption of luxury goods

H5-2: Dependent self-construal positively moderates the impact of perceived death anxiety on intention of nostalgia consumption of luxury goods

Based on the above literature review and theoretical analysis, the research model of this study is proposed as shown in Figure 2, in which the independent variable X is the perceived death anxiety, the dependent variable Y is the intention of nostalgia consumption of luxury goods (nostalgia induced by styles and crafts vs nostalgia induced by story-telling), the mediating variable Z is nostalgia (personal nostalgia vs interpersonal nostalgia), and the moderating variable is self-construal (independent self-construal vs. dependent self-construal).

MATERIALS AND METHODS

Research methods, subjects and measurements

The samples of this paper mainly come from questionnaires

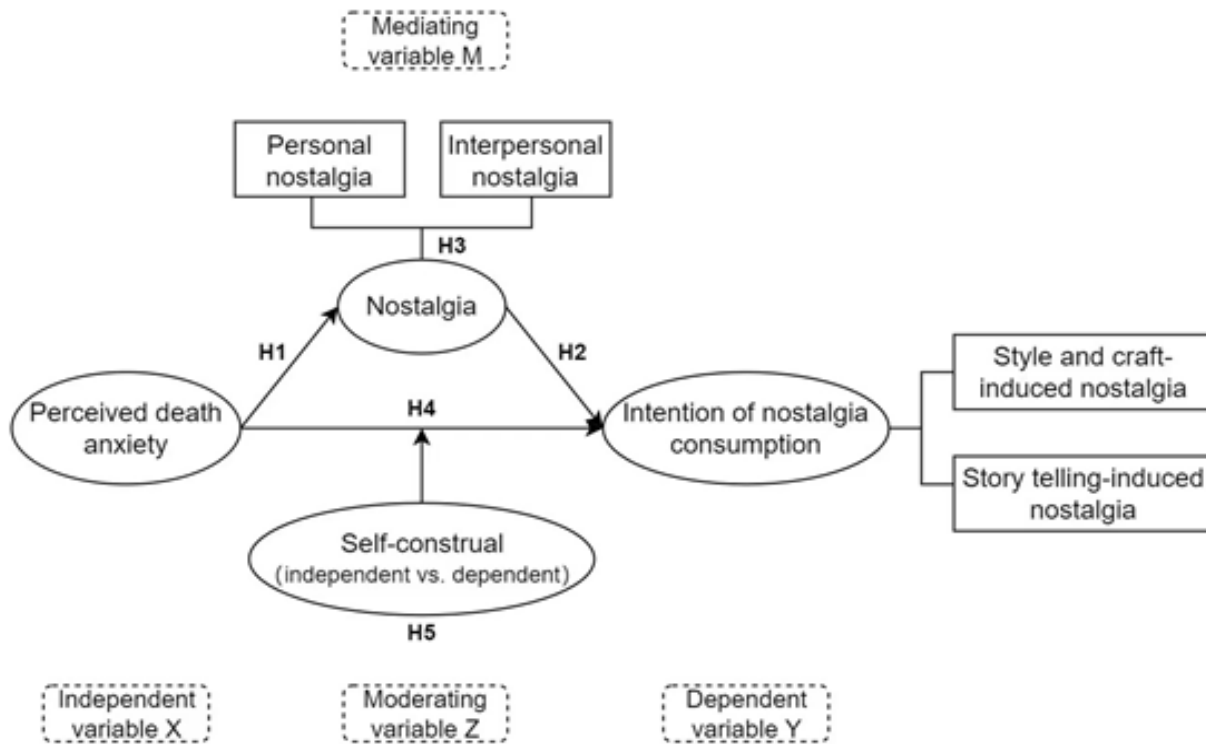


Figure 2. Research model of the impact of perceived death anxiety on intention of nostalgia consumption of luxuries. Source: Authors

collected from online social media in Beijing and Chengdu. A total of 501 samples were collected, and 419 valid samples were finally recovered after eliminating the invalid ones. The respondents cover MBA students, other students, companies' employees, civil servants and freelancers, etc. of many age groups. The overall monthly income and consumption level are above the medium. Women accounted for 58.95% in the samples, and male respondents accounted for 41.05%. 41.29% of the respondents had a monthly household income of RMB 10001-15000, and 24.34% had a monthly income of RMB 15001-30000. As for the education level, 45.11% of the respondents have Bachelor's degrees and 34.61% have Master's degrees or above. In terms of occupation, students and company employees accounted for 47.97 and 32.22% respectively. The questionnaire consists of three parts. The first part is the filtering items, which is used for the preliminary screening of the respondents. The second part asks the respondents to fill in the scale, and all measurement items are measured with a 7-point Likert Scale. The third part is statistics of the consumers' personal information. In terms of sample filtering and screening, as this paper is about the relationship between perceived death anxiety and intention of nostalgia consumption of luxuries, the respondents need to have experience of luxury purchase. If the participants have lived in an area of epidemic outbreak, had experience of a long period of lockdown, or personally experienced natural disasters such as floods and earthquakes, their perceived death anxiety can be stimulated to the greatest extent, making the research results more accurate and significant. Therefore, at the beginning of the questionnaire, two single-choice filter items are set: Have you ever purchased luxury goods (including light luxury)? Have you ever lived in a high-risk area, or experienced disasters such as earthquakes and

floods? The above two questions in the questionnaire have a jump logic. If the response is "No", the respondents will directly jump to the end and submit the questionnaire without response to subsequent questions. In terms of the measurement of perceived death anxiety, based on the death anxiety scale (T-DAS) developed by Templer (1970) and the Chinese version of the death anxiety scale of Yang et al. (2013), and through communication with 5 respondents, the following 9 questions suitable for local culture are selected, as shown in Table 1.

The measurement of intention of nostalgia consumption is categorized into style and craft-induced nostalgia and storytelling-induced nostalgia. Based on the purchase intention indicators developed by Dodds et al. (1991), the initial scale of intention of nostalgia consumption of luxuries in this paper is formed, which includes 6 measurement items, as shown in Table 2. At the same time, the two terms are explained in the questionnaire as follows, so that the participants can effectively understand their meanings before answering: (1) Style and craft-induced nostalgia means that the luxury goods adopt nostalgic styles such as classic elements and retro styles in product design, or adopt ancient and exquisite traditional handicrafts in manufacturing. (2) Story telling-induced nostalgia refers to the marketing method of telling the brand history, the product values and other nostalgic stories, recalling a warm period of time in the past underlying the goods. The measurement of nostalgia is based on Holbrook (1993)'s Nostalgia Scale, with the Chinese consumer nostalgia scale (CHINOS) developed by He Jiaxun (2010) as a reference. The statements of the items were adjusted and modified to make them more in line with the mentality of most Chinese people and their perception of the past, so that participants can understand them more deeply for accurate responses. The scale consists of two dimensions:

Table 1. Perceived death anxiety scale.

Variable	No.	Measurement items	Reference
Perceived death anxiety	A1	I am afraid of death very much	Templer (1970); Yang et al.(2013)
	A2	I'm afraid of cancer	
	A3	I'm scared to imagine that I'm going to have surgery	
	A4	I am afraid of death in pain	
	A5	I often grieve for the rapid passage of time	
	A6	The news about death makes me feel uneasy	
	A7	I often think that human life is so short	
	A8	I get nervous when people talk about death	
	A9	I worry about my death	

Source: Authors

Table 2. Intention of nostalgia consumption scale.

Variable	Dimensional construct	No.	Measurement items	Reference
Intention of nostalgia consumption	Style and craft-induced nostalgia	B11	I would consider buying luxury goods out of style and craft-induced nostalgia	Dodds et al. (1991)
		B12	I have a strong intention for buying luxury goods out of style and craft-induced nostalgia	
		B13	At a similar price, I'm more likely to buy luxury goods out of style and craft-induced nostalgia	
	Story telling-induced nostalgia	B21	I would consider buying luxury goods out of storytelling-induced nostalgia	
		B22	I have a strong intention for buying luxury goods out of storytelling-induced nostalgia	
		B23	At a similar price, I'm more likely to buy luxury goods out of storytelling-induced nostalgia	

Source: Authors

personal nostalgia and interpersonal nostalgia, with a total of 10 measurement items, as shown in Table 3. The measurement of self-construal is based on the self-construal scale (independent vs. dependent) developed by Singelis in 1994. 6 representative questions are selected for each dimension, and there are 12 measurement items in total. The scale is very mature and has been translated into many languages and applied to research in various fields, with the content shown in Table 4.

RESULTS

Reliability and validity analysis

In terms of reliability test, to verify whether the research data are true and reliable, Cronbach's α coefficient test and CITC correlation coefficient analysis was carried out via SPSS for the 419 valid questionnaires collected. The results showed that Cronbach's coefficients of all scales are 0.869, 0.946, 0.925 and 0.909 respectively, which are greater than the standard value 0.6. All of the total CITC

values of the correction items are greater than 0.5, indicating a high overall reliability of the questionnaire, which passes the reliability test. In terms of validity test, first, as to the content validity analysis, the items in the perceived death anxiety, intention of nostalgia consumption, nostalgia and self-construal scale used in this study are based on the classical maturity scales, such as those developed by Templer (1970), Yang et al. (2013), Dodds et al. (1991), and Singelis (1994). Meanwhile, we referred to Holbrook (1993), He Jiaxun (2010), Ling Zhou and other scholars' dimensional constructs of relevant variables in their research. We also interviewed and communicated with several participants in the pre-survey stage, adjusted and modified the statements of relevant questions, so as to ensure the effective consistency between the measurement items and intentions for good content validity. Secondly, in terms of structural validity analysis, the questionnaire in this research was created after appropriate selection and adjustment based on the classical scales, and there was

Table 3. Nostalgia scale.

Variable	Dimensional construct	No.	Measurement items	Reference
Nostalgia	Personal nostalgia	C11	Those old songs of the past still sound memorable	Holbrook (1993); Jiaxun (2010)
		C12	I often think of unforgettable things when I was a child	
		C13	I still like TV dramas / movies I watched a long time ago	
		C14	Seeing something familiar when I was a child will remind me of the old days	
		C15	I miss the old days I spent with my family and friends	
	Interpersonal nostalgia	C21	People are becoming more and more utilitarian	
		C22	Life is much harder than before	
		C23	People are more indifferent now than before	
		C24	Interpersonal relationships are becoming much more complex than before	
		C25	The pace of life is too fast now	

Source: Authors

Table 4. Self-construal scale.

Variable	Dimensional construct	No.	Measurement item	Reference
Self-construal	Independent self-construal	F1	Unique personality is of great importance to me	Singelis (1994)
		F2	I like to be different in multiple ways	
		F3	I would speak out rather than being misunderstood	
		F4	For me, being able to take care of myself is the top priority	
		F5	I like to be straightforward when dealing with others	
		F6	We should remain independent, even from family members	
	Dependent self-construal	G1	Collective interests shall override personal interests	
		G2	I am willing to respect the collective decision	
		G3	I consider it very important to maintain the harmony of the group	
		G4	I will try to avoid arguing even if I disagree with the group	
		G5	Compared with my personal achievements, I care more about maintaining good interpersonal relationships	
		G6	I respect the authorities I'm in contact with	

Source: Authors

a corresponding relationship between the items and dimensions. In the stage of large sample analysis, confirmatory factor analysis (CFA) was conducted with SPSS, and the validity of the scales was tested in terms of convergent validity and discriminant validity. Convergent validity evaluates the internal consistency of the same variable among several measurement items. The main indicators include factor loading, which indicates the correlation between latent variables and observed variables; CR (combined reliability), indicating the internal consistency in scale items; and AVE (average variance extracted), a measure of the explanatory power of the latent variables for the observed variables. The pass criteria are as follows: the factor loading is significant

(the absolute value is > 0.6); CR>0.7; and AVE>0.5. The minimum value of factor loading of observed variables in all scales is 0.626, which is greater than 0.6; the minimum value of CR and AVE of latent variables are 0.859 and 0.502, which are greater than 0.7 and 0.5 respectively. Therefore, the convergent validity is good, as shown in Table 5. In terms of discriminant validity, the square root of AVE of perceived death anxiety is 0.709; the correlation coefficients between perceived death anxiety and other factors are 0.542, 0.581, 0.524, 0.530, 0.406 and 0.416 respectively, of which the maximum value is 0.581 < 0.709; and the square roots of AVEs of all factors are greater than the absolute values of the correlation coefficients between this factor and other

Table 5. A summary of the convergent validity analysis.

Latent variable	Observed variable	Factor loading	CR	AVE
Perceived death anxiety	A1	0.673	0.877	0.502
	A2	0.767		
	A3	0.785		
	A4	0.721		
	A6	0.659		
	A7	0.660		
	A8	0.630		
	A9	0.626		
	Style and craft-induced nostalgia consumption intention	B11		
B12		0.893		
B13		0.881		
Story telling-induced nostalgia consumption intention	B21	0.923	0.926	0.808
	B22	0.893		
	B23	0.878		
Personal nostalgia	C11	0.831	0.929	0.725
	C12	0.887		
	C13	0.828		
	C14	0.853		
	C15	0.856		
	C21	0.863		
	C22	0.841		
Interpersonal nostalgia	C23	0.900	0.944	0.771
	C24	0.920		
	C25	0.860		
	F1	0.717		
	F2	0.656		
Independent Self-construal	F3	0.675	0.859	0.504
	F4	0.731		
	F5	0.716		
	F6	0.773		
	G1	0.643		
	G2	0.815		
Dependent Self-construal	G3	0.827	0.888	0.569
	G4	0.771		
	G5	0.704		
	G6	0.769		

Source: Authors

factors. So it can be said that the questionnaire in this research has good discriminant validity, with good discrimination between different dimensions. The constructed model has fair goodness of fit, with χ^2/df (chi square / degree of freedom) of 2.102; RMSEA of 0.062; and GFI, AGFI, IFI, CFI and NFI being 0.933, 0.915, 0.921, 0.921 and 0.889 respectively. AMOS was used to

model the structural equation and calculate the relevant path coefficients. After data analysis and processing, the results of main effect, mediating effect and moderating effect were obtained as shown in Table 6. According to the estimates of the structural equation model, the estimated coefficients of the error terms are positive numbers, and the factor loadings (path coefficients

Table 6. Path analysis of the structural equation.

Hypothesis	Path	Estimate	S.E.	C.R.	P	Test result
H1-1	Perceived death anxiety → Personal nostalgia	0.689	0.073	10.613	***	Pass
H1-2	Perceived death anxiety → Interpersonal nostalgia	0.667	0.076	10.247	***	Pass
H2-1a	Personal nostalgia → Style and craft-induced nostalgia	0.382	0.098	4.114	***	Pass
H2-1b	Personal nostalgia → Story telling-induced nostalgia	0.321	0.095	3.635	***	Pass
H2-2a	Interpersonal nostalgia → Style and craft-induced nostalgia	0.186	0.094	2.818	0.034*	Pass
H2-2b	Interpersonal nostalgia → Story telling-induced nostalgia	0.208	0.097	2.472	0.013*	Pass
H4-1	Perceived death anxiety → Style and craft-induced nostalgia	0.292	0.084	4.519	***	Pass
H4-2	Perceived death anxiety → Story telling-induced nostalgia	0.358	0.085	5.657	***	Pass

*** indicates significance at the level of 0.001; * indicates significance at the level of 0.05.

Source: Authors

between latent variables and observed variables) are all greater than 0.6, which can be further analyzed. The standardized path coefficients of the paths Perceived death anxiety → Personal nostalgia and Perceived death anxiety → Interpersonal nostalgia are 0.689 and 0.667 respectively, which are significant at the level of 0.001, indicating that the independent variable perceived death anxiety has a significant positive impact on the mediating variable nostalgia, and that hypothesis H1 (H1-1 and H1-2) is true. As to the verification of the mediating effect, the standardized path coefficients of the paths Personal nostalgia → Style and craft-induced nostalgia and Personal nostalgia → Story telling-induced nostalgia are 0.382 and 0.321 respectively (significant at the level of 0.001); the standardized path coefficients of the paths Interpersonal nostalgia → Style and craft-induced nostalgia and Interpersonal nostalgia → Story telling-induced nostalgia are 0.186 and 0.208 respectively (significant at the level of 0.05). This shows that the mediating variable has a positive impact on the dependent variables, that the mediating variables personal nostalgia and interpersonal nostalgia play an mediating role in the process of independent variable perceived death anxiety affecting the dependent variables style and craft-induced nostalgia and storytelling-induced nostalgia, and that hypotheses H2 (H2-1a, H2-1b, H2-2a, and H2-2b) and H3 are true. From the path analysis results in Table 6, it can be seen that the standardized path coefficients of the paths Perceived death anxiety → Style and craft-induced nostalgia and Perceived death anxiety → Story telling-induce nostalgia are 0.292 and 0.358 respectively, which are significant at the level of 0.001. This shows that perceived death anxiety has a significant positive impact on intention of nostalgia consumption, and that H4 (H4-1 and H4-2) is true.

In terms of the verification of the moderating effect, the standardized coefficient of the interaction term between the independent variable death anxiety and the moderator independent self-construal is -0.100 ($t = -2.252$, $p = 0.025$).

This shows that independent self-construal has a certain degree of negative moderating effect on intention of nostalgia consumption, so hypothesis 5-1 is true. The standardized coefficient of the interaction term between the independent variable death anxiety and the moderator dependent self-construal is 0.143 ($t = 2.436$, $p = 0.014 < 0.05$), indicating that dependent self-construal has a certain degree of positive moderating effect on intention of nostalgia consumption, so hypothesis 5 is true. At the same time, it can be seen that this positive moderating effect is greater than the negative moderating effect of independent self-construal. This indicates that consumers with higher dependent self-construal are more likely to have intention of nostalgia consumption of luxury goods under the influence of perceived death anxiety.

CONCLUSIONS AND IMPLICATIONS

This paper combines the terror management theory (TMT) and consumers' behavior and willingness in the field of luxury goods to explore the impact of death anxiety on consumption willingness for nostalgic luxury goods. Conclusions are made as follows:

Firstly, death anxiety has a positive impact on consumption willingness for nostalgic luxury goods. In order to relieve such anxiety and uneasiness, consumers usually buy more luxurious goods or develop a stronger desire for goods, especially for nostalgic luxury goods. Moreover, stronger death anxiety will lead to higher nostalgia-oriented consumption willingness. Nostalgic luxury goods are usually classic products that consumers are familiar with or miss, and can bring consumers some emotional attachment and belonging, thus suppressing their death anxiety and protecting their life from its disturbance. Secondly, when death anxiety positively affects the intention of nostalgia-oriented consumption, nostalgia plays a positive mediating role. After death anxiety arises, consumers will produce nostalgia to a

certain extent and tend to seek emotional belonging. They will miss the people and things they were familiar with and attached to in the past, and thus would like to buy nostalgic luxury goods more easily. Thirdly, self-construal plays a regulating role in the above-mentioned influence path. Consumers with interdependent self-construal are more concerned with their own sense of belonging and interpersonal relationships, and are more easily affected by the environment. Therefore, such consumers will have a higher intention of buying nostalgic luxury goods after experiencing stronger death anxiety. The greater interdependence will contribute to higher nostalgia-oriented consumption willingness. They prefer classic, retro and nostalgic styles that they are familiar with, as well as the products marketed with nostalgic stories. On the contrary, consumers with independent self-construal pay more attention to their own internal characteristics, pursue independence and uniqueness, and are less affected by the environment. Therefore, they have weaker consumption willingness for nostalgic luxury goods after their death anxiety increases, compared with consumers with interdependent self-construal. The higher independence will mean lower nostalgia-oriented consumption willingness. Rather than buying nostalgic luxury goods, they prefer unique and customized products that can demonstrate their personalities.

This research is very creative. Firstly, the topic of this paper is creative and cutting-edge by focusing on currently popular issues. Against the global outbreak of COVID-19 and its great influence on people's life and social economy, this topic considers the death anxiety brought by COVID-19 to people and further explores consumers' willingness to consume nostalgic luxury products. And it investigated the relationship toward the sample of population drawn from China market, specifically, the city of Beijing and Chengdu, which shed light on the luxury session's nostalgic product consuming behavior. Secondly, the research theory in this paper is creative. The terror management theory (TMT) has always been a focus of foreign studies. While there are much fewer studies regarding this aspect in China at present, which focus more on the relationship between the behavioral adaptation mechanism and consumption behavior under threat of death, etc. This paper, by creatively combining TMT, luxury brands and consumer behaviors, expands the application of TMT to subjects such as marketing, psychology and sociology, explores the extended use of TMT in the field of luxury brand marketing, and discusses related consumption willingness. Thirdly, the research contents in this paper are creative. This paper, by creatively adopting the nostalgia-oriented consumption willingness as a variable and using two dimensions including style and craft-induced nostalgia and storytelling-induced nostalgia, studies whether death anxiety can increase consumers'

willingness to buy nostalgic luxury goods. Meanwhile, this paper uses the emotional attachment mechanism, which is now still being explored, to explain consumption behaviors, and introduces self-construal as a regulating variable to identify the related underlying logic. It helps brands realize the significance of adjusting products and marketing strategies after a catastrophe attack. Fourthly, this paper is with the hot topic of terror management induced by the Covid-19, and it contributes theoretically by investigating the underlying mechanism why consumers prefer nostalgic luxury products after the terror feeling. This contributes greatly to the practitioners of luxury product operation of luxury brands worldwide; it provides guidance as what type of products to carry and launch under the Covid-19 post terror era.

Implications on management

Firstly, from the perspective of product design, luxury brands may highlight classic and retro nostalgic designs after a disaster attack. Against the global spread of COVID-19, fashion comes full circle. From the perspectives of aesthetics and business, medieval and vintage styles are becoming more and more popular. New design directors of many luxury brands redesign past collections to make them better fit the current nostalgic style and aesthetics. For example, Matthew Williams, the new director of Givenchy, carried out re-creation based on classic designs by previous design directors. This does not mean that designers lack inspiration. Instead, they are aware that the public yearn for and miss things of the past. Therefore, brands should adjust their product strategies in a timely manner during the post-pandemic period or after a catastrophe attack. They should launch more classic and nostalgic luxury products, rather than characteristic styles and customized styles, and attach greater importance to traditional craftsmanship and handmade manner, so as to bring warm memories to consumers and allow consumers to put emotions on products to relieve anxiety. Besides, nostalgic packaging may be adopted for luxury goods during the post COVID-19 era. Brands may add nostalgic elements to both product design and package design. For example, ingenious gift box package design in retro shapes such as old newspaper patterns, cowhide materials, and tape recorder envelopes, may be used to bring customers a sense of nostalgia. Secondly, with respect to marketing, luxury brands can mainly launch nostalgic advertisements to tell brand and product stories during or post the COVID-19 era. The ads and marketing may highlight the long history of brands to reflect the rich culture of such luxury brands. Or a moving story may be created for a certain product, and some warm nostalgic elements offering a sense of safety can be added to ads

to remind consumers of good old days. For example, a brand may design a nostalgic scene and add some iconic old songs of an age for its flagship product to bring consumers back to a target era, driving more consumers to buy its products. In addition, luxury brands can organize on-line and off-line nostalgic activities. As for off-line marketing, luxury brands may carry out nostalgic activities at theme show venues and off-line shopping mall exhibitions every season. As for on-line marketing, luxury brands may initiate some activities related to nostalgia on Weibo, Douyin, Xiaohongshu and other platforms to stimulate consumers' passion for participating in these activities, thus inspiring consumers' nostalgia and improving brand sales and popularity. For example, a series of interactive activities such as "childhood memories of the post-80s and post-90s", "a collection of retro styles" and "share nostalgic stories" may be held to attract consumers and increase users' attention and favor to the brands. Thirdly, from the perspective of user characteristics, considering the varied effect of independent and interdependent self-construals on nostalgia-oriented consumption willingness, brands may adopt different communication techniques during marketing for consumers with different self-construals. The types and styles of products recommended should also depend on different types of consumers.

LIMITATIONS AND PROSPECT

The experimental research method is usually used in many academic papers that study consumers' behaviors. It can better control disturbance variables, effectively manipulate and measure tested samples, and reveal the relationship between variables. However, due to the frequent closure and isolation of schools and communities as a result of continuous emerging of confirmed cases in many regions, it is impossible to invite outsiders to enter schools to participate in the experiment. Therefore, this study selected questionnaire survey as its research method. This affects the validity and authenticity of data to a certain extent. Secondly, this study is relatively cutting-edge in China and most of the references are from previous and recent articles on foreign journals. The research models need to be improved. Moreover, most scales selected in this paper are foreign classic ones, which might not completely fit in the context for Chinese people after translation. In the future, the experimental research method will be used to study this topic more specifically and accurately. Further studies will focus on the effects of death anxiety, threat or insecurity about survival on consumer behaviors, and the mechanism of the effect on nostalgia-oriented consumption in the macro environment, thus contributing to and enriching the research in this field in China.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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